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[OFFICIAL NOTICE.]

In the Matter of the Membership List, New England Association of Gas Engineers.

NEW ENGLAND ASSOCIATION OF GAS ENGINEERS,
OFFICE OF SECRETARY,
EAST BOSTON, MASS., November 25, 1906.

To the Members of the New England Association of Gas Engineers:

Any member of the Association whose present address is other than that in the printed list of March, 1906, will confer a favor upon the Secretary by notifying him of said change.

N. W. GIFFORD, Secy.,
No. 26 Central Square, Boston, Mass.

JUST before going to press the following telegram came to hand: "St. Louis, Mo., December 27th, 1906.—Offices of Laclede Gas Light Company destroyed by fire to-day. Records and valuable papers safe. Cause unknown. Broken service in cellar fed flames. Loss, $40,000. Details by mail.—R. W. P."

BRIEFLY TOLD.

DEATH OF MR. ADAM WEBER.—In deep sorrow we report the death of Mr. Adam Weber, whose passing away occurred the morning of the 22d inst., at his home, 203 Second avenue, New York. The summons came to him in the gentlest way, a ruptured blood vessel in the brain having broken at the very moment he was complaining to his wife of some untoward symptom respecting the disease from which he had long been a sufferer. Deceased was in his 82d year, having been born March 11th, 1825, in Bechtheim, near Worms-am-Rhine, Hesse Darmstadt. He settled in New York in the early forties, and here his life was spent, with honor and credit always. The funeral services were held at the Weber home, the Reverend Doctor Hugh Birckead, rector of St. George's Episcopal Church, officiating, with the Rev. Dr. Emil Meury assisting. The Masonic ritual was also observed. The beautiful music service was rendered by the Liederkranz quartette, assisted by a string accompaniment directed by Herr Dannenreuther. The vast mourning throng numbered many representatives of the gas industry, prominent amongst whom was Mr. W. H. Bradley, Chief Engineer of the Consolidated Gas Company, who had been an intimate of deceased for at least 2-score years. The interment was made in the beautiful Weber mausoleum in the old section of Greenwood Cemetery. He is survived by his widow, who was indeed to him through all their wedded life a wife and helpmeet in every best and truest sense of these tender words, two sons and two daughters. We will print next week an accurate resume of his lengthy, vigorous, resultful life.

CURRENT COMMENT.—

A CORRESPONDENT in New Haven, Conn., writing under date of the 20th inst., forwards the following: "At a special meeting of the Directors in the Meriden (Conn.) Gas Light Company, held the afternoon of the 14th inst., the inclosed resolution was adopted. The Secretary was instructed to spread the same upon the minutes of the Company, to publish it in the newspapers of Meriden, and to forward a copy of the same to the family of deceased." The resolution was as follows:

Resolved, That in the death of Samuel Dodd, which occurred on the evening of the 12th inst., at his home on Colony street, this Company has sustained an irreparable loss in the death of its Treasurer, Secretary and Director, who for 46 years was connected with the Company in an official position. On the earliest records of this Company, in August, 1860, our worthy Treasurer's name appears as one of the founders. His advice and counsel were eagerly sought in its early as in its later years, his faith never wavering in its ultimate success. We who remain desire to place upon the records our appreciation of his business ability and sound judgment, his unfailing courtesy and kindness towards his colleagues. He leaves a record of a long, honorable and useful life, the memory of which will remain with us always.

WALTER HUBBARD,
C. F. LINSLEY,
E. J. DOOLITTLE,
G. M. CURTISS,
F. C. SHERMAN,
C. A. LEARNED. } Directors.

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Deceased was born in Hartford, Conn., in 1834, where his early business career was spent. In 1857 he accepted the position of Cashier in the Home Bank. Subsequently he engaged in the silver goods manufacture, eventually organizing the Parker & Caspar Company, manufacturers of silverware, which concern was later on merged with the Wilcox Silver Plate Company, that in turn forming a member of the merger that resulted in the formation of the International Silver Company in 1898. Of this concern Mr. Dodd was elected President and was such at the time of his death. He also remained on the Directorate of the Home National Bank. He served as a member of the Connecticut General Assembly from Meriden in 1879. He married Catherine S. Brooks in 1879, and as to his progeny, it is known to us that a son, Charles M. Dodd, a resident of Hartford, survives.

"T. R.," writing from Cleveland, O., says that some days ago the artificial gas company at Wooster, O., made an assignment for the benefit of its creditors. The liabilities are put at $40,000. Mr. John McSweeney, of Wooster, was appointed receiver. It is hoped that a reorganization of the Company will be satisfactorily arranged.

We are told that George M. Tuttle and Robert L. Rice, of Niagara Falls, N. Y., and John Seymour, of Toronto, Ont., are the main parties in interest in the Frontier Gas Meter and Appliance Company, which has been incorporated in Albany with a capital of $25,000. It is to do business in Buffalo, N. Y.

Mr. W. E. Davis, formerly of Lima, O., finds that he will have plenty to do in connection with his new post as Superintendent of the Owensboro (Ky.) plant. Perhaps a trifle of reconstruction there would well help him out.

A correspondent forwards the following: "Recently in the Superior Court sitting in Wilmington, Del., a jury returned a verdict in favor of the defendant in the case entitled Michael Sullivan against the Wilmington Gas and Electric Company, of Wilmington, Del. Plaintiff asked for $5,000 for injuries sustained by the fall of a tripod derrick. L. Irving Handy and Herbert L. Rice closed the plaintiff's side, and William S. Hilles, for the Company, moved for a nonsuit on the ground that there had been no negligence on the part of the Company, and that no latent danger lurked in the derrick. The court refused to grant the nonsuit, and Mr. Hilles announced that the Company would offer no testimony in defense. The jury was out about 1½ hours before returning with its verdict. The history of this case shows upon what flimsy pretexts companies may be put to big expense and vexatious criticism.

Mr. Charles V. Newman, of St. Louis, Mo., has been appointed Manager of the gas properties controlled by the Greencastle (Ind.) Natural Gas Company. This concern will soon be coming on the market for "boosters" in the shape of artificial gas works.

The Bayonne (N. J.) Council has awarded contracts for the public lighting of that place to the Public Service Corporation of New Jersey, on the following basis: "The Company agrees to provide and maintain as many arc lights for lighting the streets in the city of Bayonne as the party of the first part may from time to time order for the term of 5 years from the 1st day of October, 1906, at a cost of $85 per year for each said arc light until the first day of January, 1908; providing that at no time during the said term shall the number of said arc lights be less than 250; after the said first day of January, 1908, at a cost of $80 per year for each arc light; providing that at no time during the balance of the term of this contract shall the number of said lights be less than 350; said lights to be lighted each and every night from sunset to sunrise during the term of this contract. That each lamp at all times shall give a light equal to the standard lamp of 9/10 amperes for 45 volts, being what is known as a 2,000-candle power lamp. The Company also agrees to furnish electric power sufficient to operate fire and police telegraph alarm system in the police station of the party of the first part located on the corner of West 26th street and Avenue C, free of charge; and that the price of electric incandescent lighting to the city of Bayonne for public buildings, including fire engine houses, police stations, school houses and free public libraries, shall, during the term of this contract and any renewal thereof, be the sum of 8 cents per kilowat hour. For gas street lighting the price agreed upon is $18 a year for each street lamp. It is further agreed that the price of gas to the city for public buildings, including engine houses, police stations, school houses and free public library, shall during the term of this contract and any renewals thereof, be the sum of $1 per 1,000 feet.

[As Furnished by the Official Stenographer.—Continued from page 1116.]

PROCEEDINGS, FIRST ANNUAL MEETING, THE AMERICAN GAS INSTITUTE.

Held in the Auditorium Hotel, Chicago, Ills., October 17, 18 and 19, 1906.

First Day—Afternoon Session.

Discussion on the Paper by Mr. W. H. Gartley, on "Delivery of Uniform Candle Power to the Consumer through all Seasons of the Year."

The President—Gentlemen, you have heard the reading of this most valuable paper, and I hope it will be given a very thorough discussion. Mr. Gartley, will you please have a seat on the platform? Mr. Forstall, will you have anything to say on the subject?

Mr. Walton Forstall—I regret it very much, but my line of work has been for many years in connection with the distribution of gas exclusively.

The President—Mr. Walton Clark, will you not have something to say on this subject?

Mr. W. Clark—Mr. Gartley has said about all that I can say. I will say, however, that it has been a very important matter with us in Philadelphia to maintain our standard of candle power with the least use of oil. We are very rigidly held to 22-candle power at a point a mile from the works. We have not felt, however, that we are entirely meeting the expectations of the people of Philadelphia simply supplying 22-candle power gas a mile from the works, and we have made every effort, by experiment and investigation, in the hope of being able to find a method by which we could maintain that candle power to the consumer without having it much above 22 at the testing station. Mr. Gartley set up photometers in many parts of the city and has given a great deal of study to the question. How well he has succeeded the paper shows. He, Mr. Bond and the other men who worked with them have worked out their method. There may be other methods of doing it that are equally successful, but there is no method that is more successful, I think, because, as shown in his paper, that, carrying a candle power of approximately 22.75 at the testing station, a mile from the works, he is able to deliver 22-candle power to his consumers generally, shows that the method is eminently successful.

Mr. Nettleton—May I say a word before Mr. Gartley replies? I confess I am astonished at the results claimed, but am free to say, however, that I do not see exactly the difference between his method and the usual practice. As I understand Mr. Gartley, he is using an oil that has the reputation of producing a gas, the candle power of which falls off badly in extremely cold weather. If Mr. Gartley will explain what he does to make his candle power hold up I will be greatly obliged.

Mr. Gartley—I do not wish to be understood as saying there will be no falling off in candle power when the gas is cooled. One of the purposes of my paper is to show how much the falling off in candle power will be. Referring to Plate IV., you will find there a curve that gives the loss in candle power found in a gas made from Texas oil, between the limits of 70° and 35°. For instance: If it has been found that the gas will drop in the mains to 40° in temperature, this curve shows we must put into our commercial holder a gas of 25.3-candle power, the gas being cooled at the inlet to the works' photometer to 70°, to yield 22.5-candle power at 40°. I do not mean that the gas must show 40° on a thermometer inserted in the main at the testing station; I mean the gas shall have been cooled as low as 40° somewhere between the works and the testing station; and this determination is made not by a thermometer but by the hygrometer described in the paper. If it has been cooled at some intermediate point and is then increased in temperature again before arriving at the testing station, it would be a gas unsaturated with hydrocarbon vapors, and as curve 4 deals only with gases saturated, and as the gas after being cooled to 40° cannot increase in candle power between that point and the testing station, the hygrometer will show the temperature which must be applied on curve 4 to tell us what candle power we must put into the commercial holder. Do not understand me as saying that the gas to the consumer will fall 2.8 candles under these conditions, because such is not the case. The difference is due to the fact that on a bar photometer (which is the only accurate means of determining candle power) the gas is passed through a wet meter, while the consumer's gas is passed through a dry meter. If a gas that has been cooled to 40° passes into a photometer meter the temperature of which is 70°, the gas will absorb water vapor in the meter until it becomes saturated with water vapor at 70°. At 40° the gas contained .83 of 1 per cent. of water vapor. At 70° it will have

picked up 1.6 per cent. of water vapor additional. The gas as metered on the photometer will have 97.57 per cent. of illuminating gas and 2.43 per cent. of water vapor, while the gas that goes to the consumer will have 99.17 per cent. of illuminating gas and .83 of 1 per cent. of water vapor, and the consumer will, therefore, get a higher candle power than that shown on the bar photometer. In this particular the bar photometer as at present introduces an error and is an example of what I hope a committee appointed to investigate the method of candle power determinations will consider. A solution would be the use of a dry meter on the bar photometer, at least where it is to be used in making determinations at different points in the distributing system.

Mr. Gardiner—I have been extremely interested in Mr. Gartley's able paper, and in the scientific methods brought to bear by him in the solution of his problem. I certainly hope the work will be prosecuted along the lines he suggests. It occurs to me, however, that it might not be expedient to have this question of candle power spread upon the records without making a statement of what I take to be a fact in regard to it; and that is that, important as it is to-day, I understand it is becoming less and less so. In reality, most of the gas from many gas companies is to-day sold for its calorific value. I simply make that statement so it will be borne in mind in conjunction with this subject of candle power.

Mr. K. M. Mitchell—I think the point Mr. Gartley made about the establishment of a standard of taking candle power is of the utmost importance. I think it should be noticed, and that there should be some recommendation made to the Institute about the matter so that it can take it up, and not allow it to go along, simply appearing upon the record, without calling attention to the fact that some method of standardizing candle power should be maintained or recommended by the Gas Institute. What Mr. Gardiner has said about taking the value of gas by heat units is in order, too.

Mr. Earnshaw—Mr. Gartley's paper is of peculiar interest to me because I had the privilege of assisting in the earlier development of the system of candle power control which he has so ably described, and I can testify that his present success is only due to careful, scientific method and the most painstaking and comprehensive experimental work. Mr. Gartley's treatment of the subject presents the question of candle power regulation in an entirely new light, and many a worried manager will thank him for showing the way to overcome a serious problem. There are a few points brought out by Mr. Gartley to which I wish to call particular attention. Mr. Gartley states, "When a gas, saturated with hydrocarbon vapors, comes in contact with a condensate from which it is far removed from equilibrium, the re-arrangement to establish equilibrium becomes more violent and we say that the gas has been shocked." This statement is theoretically true, but is of practical effect only when the surface of condensate exposed is very large in proportion to the volume of gas. A gas saturated with hydrocarbon vapor, and standing over a condensate with which it is not in equilibrium, can only suffer change in its vapor content by the slow process of diffusion, and the establishing of a condition of equilibrium with the condensate involves an important time factor. In practice the effect of "shock" is achieved in a somewhat different way. When a gas saturated with a composite hydrocarbon vapor is exposed to a sudden and extensive lowering of temperature, the condensate forms as a mist and is in intimate contact with every particle of gas and uncondensed vapor. The normal condensate, due to the lowered temperature, contains a large proportion of low tension vapors, but due to the principle stated it is not in equilibrium with the vapors remaining uncondensed in the gas. An immediate readjustment takes place, whereby a proportion of the valuable high tension vapors goes to the condensate and is deposited as tar and lost. If, on the other hand, the cooling is gradual and time allowed for the tar-mist to settle out as a liquid, the injurious readjustment occurs only in a lessened degree and an increased quantity of high tension vapors is carried forward to the final stages of condensation. It follows, therefore, as Mr. Gartley says, that it is important to remove from contact with the gas in the process of condensation the condensate at about the temperature at which it was deposited. To this fact is due the great value of the relief holder in water gas condensing, and the known good effect of air condensers of large volume for coal gas. To summarize the points brought out by Mr. Gartley, let us suppose that a manager wishes to avail himself of this system of candle power regulation. The important points to be observed are: Uniformity of generator house practice; careful regulation of temperature conditions in the condensing and purifying operations; reliable observation of the candle power of the gas at inlet to commercial holder, the gas always reaching the photometer at a fixed standard temperature; observation of the hydrocarbon dewpoint at a point in the distribution system sufficiently remote from the works; determination of the candle power required at holder inlet to deliver desired candle power at the temperature indicated by dewpoint. Mr. Gartley's description of the methods used in Philadelphia covers everything required, but it is important to observe that gas made from different characters of oil will behave differently when cooled, and the loss in candle power for a given face in temperature will vary. It follows that it is desirable, and even necessary, to secure an oil supply of uniform character, and if necessity compels the use of different qualities an effort should be made to avoid mixing and provide separate tanks for each kind of oil. By the aid of a cooling coil the candle power loss at lowered temperature can be determined for the grade of oil in use, and a curve constructed that will enable the works superintendent to know what candle power he must make to maintain the desired candle power in the distribution system.

Mr. Egner—Mr. President, I was very much interested in Mr. Gartley's paper, and we all are interested in photometry so as to make the readings as definite as possible. My observation has been that with the old methods, where the candle power was taken by different men even at the same time and with the same gas, the results are not the same, hence cannot be accurate. In that connection I want to say I have been struck with the simplicity of the selenium photometer; and I have wondered why it was not adopted more generally. I think it has been recommended before but it has not received the attention that it deserves. Some matter about it has been published in the American Gas Light Journal, but it has been strange to me that it has not been more fully investigated and used. The selenium photometer is very simple and is scientifically accurate. No matter what the difference of eyesight in men may be who read it, they are bound to arrive at the same result. I thought I would mention the matter at this meeting of the Institute as perhaps it may be taken up by some of the gentlemen present. The selenium photometer depends largely on the property of selenium to conduct electricity more easily in light than in darkness, and anybody, almost at sight, can read the candle power of the gas, and there can be no mistake made at all. It can always be read like print. I am not prepared to give a close description of it at this time, and I do not know it would be pertinent to the paper if I did, but I would like you all to try to look up the selenium photometer. Its strongest points are its accuracy and simplicity. Besides that, it does away with all the objections which we have found to the jet and to the bar photometer, because it is bound to be scientifically accurate and everyone who takes an observation with it must arrive at the same result. If any number of men take an observation of the same gas with a selenium photometer their results will be the same. There will be no difference. And that is the main difficulty which it has sought to overcome in connection with the bar photometer, where a difference in the wick of the candles used would often seriously affect the results obtained. This cannot happen with the selenium photometer. I am very much surprised that manufacturers of gas measuring apparatus have not taken it up and brought it out, because the whole question of accuracy in photometers could be solved by using the apparatus described by Mr. H. Raupp, of Mayence, Germany, at the meeting of one of their Associations during the present year. It was illustrated in the American Gas Light Journal for August 27th last.

The President—Is there any further discussion on Mr. Gartley's paper?

Mr. Egner—I would just like to say this in addition, Mr. President. Mr. Gartley's paper shows great patience and research, and also the great care involved in its preparation. A great deal of time must have been spent upon it. Many papers have been read upon this subject in the past, and much discussion has been had, but when we have such a substance that can be applied in photometry and is so scientifically accurate as selenium appears to be, it is too bad it is not better known. Perhaps no one in this room has seen the selenium photometer. I hope some one will take the matter up and bring it to the attention of the Institute at some future date. Mr. Gartley's paper brought this subject to my mind. It is a property of selenium to conduct electricity in light better than in darkness, and because of that attribute it is also proposed to use it for the automatic lighting and extinguishing of lamps, especially public street lamps. I think we are much indebted to Mr. Raupp, Superintendent of the City Gas Works, of Mayence, Germany, to have again brought the subject prominently to the attention of the gas industry. I am not well enough versed to give you a complete description of the photometer, but I know that all of this can be and has been practically demonstrated. It is certainly worth while investigating, gentlemen.

Mr. Gardiner—I would like to move that the incoming President be

requested to appoint a committee to investigate as to methods of taking candle power gas. [Seconded.]

The motion was put by the President, who subsequently declared it carried. The President, on behalf of the Institute, heartily thanked Mr. Gartley for his valuable paper.

Some Announcements by the Secretary.

The Secretary—I am requested to announce that the Illinois Gas Association will have a meeting immediately upon adjournment of the Institute, in Club Room No. 4. I will also state that the system of registering attendance is a card system, which is in charge of two persons at the entrance in the anteroom. Those of you who have not registered will please do so as soon as possible. To the 881 who have registered on the membership list, and its supplement that has been distributed, some additions are to be made. Some applications have come in since these were printed. These persons where they register their attendance will please give their names, occupation and residence. The applications which came in yesterday and to-day we have a record of downstairs, so that the persons who have given their applications in to-day and yesterday need give themrelves no further concern about them.

The President—We now have the paper on

THE EFFECTS OF HIGH PRESSURE UPON ILLUMINATING GAS,

by Mr. Edward C. Jones, of San Francisco. As Mr. Jones is not present, the paper will be read by the Secretary.

The Secretary read as follows:

In order to determine the results of compression upon the chemical and physical properties of illuminating gas, the writer used a portable gas compressor operated by a gasoline engine. This first stage compressor effects compression up to 100 pounds, and delivers the gas into a steel tank, 5 feet long, 12 inches diameter, furnished with a gauge and an outlet leading into a second stage compressor, capable of raising the pressure to 300 pounds, and in its turn delivering the gas into another horizontal tank 6 feet long and 10 inches diameter, also supplied with a gauge.

The second stage compressor was especially designed for this work, and consists of 2 tandem differential cylinders, the larger of which is operated by gas pressure at 100 pounds from the first stage compression tank, and raises the pressure by operating the piston in the smaller cylinder. The apparatus might be termed a gas ram.

From the second stage compression tank, the gas was admitted to an upright, galvanized iron house boiler, 5 feet long by 11 inches in diameter, fitted with a gauge and blow off valve. This boiler communicates directly with a bar photometer.

The gas used for these experiments was what is known as crude oil water gas of 21.6-candle power. This gas is made from 14° B., California crude petroleum, without the use of solid carbon in any form. It is a well fixed gas and is used for all purposes throughout the Pacific Coast, and with the exception that it has a higher percentage of illuminants, it resembles coal gas so closely that it might almost be called an artificial coal gas. Its specific gravity was .413, and it contained 626 B.T.U. per cubic foot.

The experiments were made with unpurified gas, which analyzed as follows:

Illuminants	7.0
Marsh gas	29.7
Hydrogen	50.0
Carbon monoxide	5 2
Carbonic acid	3.0
Oxygen	Trace
Nitrogen	5.1
	100.0

A successive series of compressions were made with an increase of 30 pounds at each compression. Fresh samples of gas were used in every case—that is, gas that had been once compressed was not used again in any succeeding compression. After each compression an analysis and a photometer test were made, and the results tabulated as below.

The most remarkable effects of compression are the continuous reduction of the candle power and the elimination of naphthaline and sulphuretted hydrogen. From a candle power of 21.6, the gas dropped to 17 candles at 60 pounds, to 11.1 candles at 180 pounds, and to 5.5 candles at 300 pounds. The crude gas contained 200 grains of sulphuretted hydrogen per 100 cubic feet, while the 300 pound gas contained no sulphuretted hydrogen.

The appearance of the flame of the compressed gas is very deceptive. It looks fair and, to the naked eye, its color is unchanged. When compared with standard candles, its richness is found to have gone, and when observed through the spectroscope the yellow portion of the spectrum has narrowed, and the blue and green increased.

The next point of interest was whether the liquid compression product could be reintroduced into the compressed gas upon releasing the pressure. The 300 pounds gas was brought into contact with the compression liquid, and the candle power rose from 5.5 to 29.3. To enrich this compressed gas it is not necessary to scrub it with compression liquor. It is required only that the gas should pass over the surface of the liquor.

The most important point of all, when the condensed illuminants were restored to the gas it was discovered that the sulphuretted hydrogen did not again appear in the gas. The explanation of this, I believe, is that the sulphuretted hydrogen on leaving the gas combines chemically with some of the hydrocarbons to form an organic sulphide or mercaptan.

In support of this the compression liquid gives no test for sulphuretted hydrogen with lead acetate, and if the liquid is distilled the hy-

Table A.—April 12, 1905.

Lbs.	C_nH_{2n}	CH_4	H_2	CO	CO_2	O_2	N_2	Sp. Gr.	B.T.U.	C. P.	Notes.
0	7.0	29.7	50.0	5.2	3 0	Tr.	5.1	.413	626	21.6	H_2S 200 Grns.
30	6.8	29.8	50.1	5.4	2.8	Tr.	5.1	.411	625	20.0	
60	6.8	29.6	50.2	5.5	3 1	0.1	4.7	.412	624	17.0	
90	6.8	29.6	50.3	5.5	3 1	Tr.	4.7	.411	624	16 0	
120	6.7	29.5	49.2	5.6	3.2	0.1	5.7	.422	618	15.0	
150	6.7	28.8	51.3	5.5	3.3	0.1	4.3	.407	617	14.0	
180	6.5	29.0	51.0	5 5	3.0	Tr.	5.0	.407	615	11.1	
210	6.0	29.0	51.0	5.7	3.2	0.1	5.0	.408	607	9.6	
240	6.3	29.0	51.0	5.4	3 2	0.1	5.0	.408	611	10.8	
270	6.0	29.1	51.6	5.5	3.2	0.1	4.5	.403	610	6.2	
300	5.7	30.0	51.4	5.6	3.0	0.1	4.2	.399	614	5.5	H_2S O.

Table B.—September 8, 1906

Lbs.	C_nH_{2n}	CH_4	H_2	CO	CO_2	O_2	N_2	Sp. Gr.	B. T. U.	C. P.	Notes.
0	8.4	27.5	50.3	5.0	4.0	0.2	4.6	.425	653	20.9	H_2S, 260 Grns.
30	8.3	24 8	54.1	5.0	4.0	0.2	3.6	.402	635	20.8	
60	6.0	23.6	55.5	6.8	3.8	0.2	4.1	.393	587	17.6	
90	6.2	25.2	53.3	5.0	3.6	0.2	5.5	.401	606	11.5	
120	6.4	24.0	45.6	5.0	3 6	0.2	5.2	.390	594	11.1	H_2S, 70 Grns.
150	6.2	21.2	61.5	5.0	3.6	0.3	2.2	.348	580	9.7	
180	5.8	24.4	57.3	4.8	3.2	0.2	4.3	.371	591	8.6	
210	5.7	22.9	60.2	5.0	3.1	0.2	2.9	.349	584	7 2	
240	5.4	23.0	59.4	5.0	3.1	0.3	3.8	.357	576	6.5	
270	5.6	22.2	60.2	5.2	3.0	0.2	3.6	.352	575	5.8	
300	6.2	22.8	58.0	4.8	3.2	0.2	4.8	.371	585	4.7	H_2S, O.

drogen sulphide does not appear until near the last fraction where all the sulphuretted hydrogen and naphthaline appear. This fraction gives an immediate test for sulphur with lead acetate, showing that the heat has dissociated the sulphuretted hydrogen from some other compounds. Moreover, if sulphuretted hydrogen made in the laboratory be dissolved in the compression liquid, that liquid will then give the lead test for sulphur, and heating will drive off all the sulphuretted hydrogen so dissolved before the first fraction has come off. Such liquor will also foul pure gas.

A later series of tests shown in the second table confirm the results of the first series.

The crude gas contained 260 grains of sulphuretted hydrogen, and when compressed to 120 pounds the gas only contained 70 grains, and the gas at 300 pounds pressure contained no sulphuretted hydrogen.

The greatest loss of candle power was between 60 and 90 pounds, while in the previous series it was between 30 and 60 pounds. This may be explained by the fact that the candle power of the first gas was higher than the second and had not the stability, its additional candle power being derived from illuminants more easily removed by compression.

The writer is familiar with the many experiments heretofore made to determine the effects of compression upon the candle power of illuminating gas, and has had experience in the compression of large quantities of gas commercially to supply the various high pressure systems in California. The writer has also become aware of the great difficulty of ascertaining the actual damage done to the gas by compression, on account of the avidity, one might say thirst, with which the gas reunites with its condensed hydrocarbons.

In the foregoing series of experiments, great care was taken to use fresh samples of gas, and to remove every trace of condensed liquor before each experiment. In many high pressure systems, where no condensed liquor is drawn off no loss in candle power is observed. It has, therefore, been taken for granted that no reduction in candle power occurred.

The write uses, in connection with all high pressure systems under his care, a simple re-enriching tank, through which all the compressed gas finally passes before going into the main pipes. This is called an "auto enricher," on account of its simplicity and self-operation. It consists of a compression tank placed horizontally with an inlet at the top at one end, and an outlet at the other top at the end. This compression tank is placed at the outlet of any other storage compression tanks there may be in the system, and all gas as well as all compression liquor must pass through this tank. No compression liquor is drawn away, and the mere contact of the compressed gas with the liquor satisfies the lack of hydrocarbons and restores the gas to its normal candle power. This is proved in practice in many large systems every day, and one of its strange features is that there is no over or under enrichment of the gas. To sum up the results of these experiments, we find that the compression of gas removes sulphuretted hydrogen and naphthaline, and if the compression is carried as high as 300 pounds per square inch, purification in gas works may be dispensed with. The purification of gas by compression is ideal, as it is continuous and cleanly, requires no purifying material, nor expensive and cumbersome purifiers.

The compressed gas, besides being freed from sulphur impurities, contains no naphthaline, and while this is recognized as a valuable illuminant, its value is more than offset by the troubles it causes.

The gas is not damaged in illuminating value if the condensed hydrocarbons are kept in contact with it, and to demonstrate the actual effects of high compression upon the gas, it became necessary to exert great care that the results should not be misleading, because of the ease with which the gas takes up condensed hydrocarbons and resumes its normal candle power.

Discussion.

The President—Gentlemen, this paper to which you have listened seems valuable, in that it gives us much good information of value. I would be glad if there would be a free discussion of this paper.

A Member—I do not quite understand the paper, but as it appears I do not see very much use in taking the sulphuretted hydrogen out if it is going to be put back in another form. In other words, as I understand the paper, the sulphur is taken out in one form and put back in another.

Mr. Norris—I understood that it came out in the condenser and did not remain in the gas.

The Secretary—The gas upon being released took up no sulphuretted hydrogen, and Mr. Jones' explanation was that it formed an organic sulphide.

Mr. Gardiner—In this connection I would like to say that, under some statutes or municipal ordinances, the presence of sulphuretted hydrogen in itself is forbidden, whereas a certain definite amount of sulphur is allowed. Therefore, if a certain gas is low in sulphuretted hydrogen and the sulphuretted hydrogen is transposed, a direct advantage may thereby be obtained. I would like very much to ask as to the relative cost of purification under this system, including general fixed charges.

Mr. A. S. Miller—I think, as was just intimated, there is an intent upon the part of the author to state that it goes back into the gas in the form of vapor and carries the sulphur with it. Also, I should think in ordinary practice we would find it very difficult to carry back to the gas its proper proportion of hydrocarbons. If we were to compress a lot of gas for delivery a long distance away, some of it might get its proportion of carbons and some might not. I am sorry the author is not here, as I think he has left the question of sulphur somewhat obscure.

Mr. W. Clark—It hardly seems possible Mr. Jones can mean there go back into the gas, for every 260 grains per 100 feet of gas taken out, 260 grains of sulphuretted hydrogen, which is almost all sulphur. That is gas which could be distributed, but it could not be burned with any comfort.

Mr. A. S. Miller—It is a most interesting proposition that we can take sulphur out of gas by compression and keep it out.

A Member—In the paragraph next to the last of the paper I think the author throws some light upon that, and rather intimating that it does not go back. He says the compressed gas, besides being freed from sulphur impurities, contains no naphthaline. He says so emphatically.

Mr. Shelton—I am sorry Mr. Jones is not here to explain more clearly some of the apparent discrepancies referred to. There are some statements here which are surprising. I cannot, either, entirely account for them myself. Mr. Jones has opened up to us rather a new point of view or a new line of thought, and a suggestion for original work. I might suggest this has developed in direct response to the invitation of the Institute to all of the Associations to be represented here and present papers. I think, aside from the technical value of Mr. Jones' paper, that it has been an exceedingly kind thing for the Pacific Association to proffer for the benefit of this Institute the first word on the unusual subject in question. As to the question raised as to whether the sulphur goes back into the gas, I think he said it did not go back into the gas. He also says, page 87, as to the point to which Mr. Miller referred, there was no over or under enrichment of the gas, but that it seemed to pick up the proper amount upon passing over condensation. I do not propose, Mr. Chairman, or profess to be able to offer any explanation of these things. We can only regret that Mr. Jones is not here, but he has certainly opened up a new line of thought for us. I think that the Institute ought to do its full duty in the expression of its appreciation of the receipt of the paper.

Mr. Bond—Regarding the re-enrichment of the gas, and the statement made late in Mr. Jones's paper, to the effect that, upon contact with its compression liquid, a gas is restored to its normal candle power, but no higher. I would like to call attention to the third paragraph, page 84. He says: "The 300 pounds gas was brought into contact with the compression liquid, and the candle power arose from 5.5 to 29.3." This was with a gas whose initial candle power had been 21.6, according to his Table A, and hence there does appear to be over-enrichment. I would like to ask how much gas has passed through his photometer before he went from the determination of one candle power to another. It seemed to me, from the description and dimensions of his apparatus, that there cannot be much. The lack of uniformity shown at 210 and 240 pounds pressure in Table A, and the fact that though he starts with practically the same candle power in Tables A and B, he finds, in the first instance, 180 pounds pressure necessary to reduce to 11 candles, while in the second instance 90 pounds pressure does it, and this leads me to inquire whether these discordant results may not be due to lack of proper purging of his photometric apparatus and connections when changing from one compression to the next.

The President—There probably was some mistake, because in the other table he shows a continuous drop.

Mr. Bond—The question arose in my mind as to what extent these candle powers going down the scale are exposed to partial resaturation in the photometer apparatus from the preceding gas. Of course, there would be in the final compression a very small amount of vapor in the gas for resaturation purposes.

The President—Mr. Shelton, you have had some experience with compressed gas.

Mr. Shelton—Unfortunately my experience has not been in connection with photometrical operations or with that kind of oil gas process.

Mr. Norris—I am a little surprised at the small loss at 30 pounds pressure. Quite a number of men here who have compressed pretty high in connection with high pressure distributing systems, and I would like to hear from some of them whether their experience bears out these small losses.

Mr. Egner—I have had a little experience with compressed gas, the results of which were laid before one of the Associations, I think, in 1891. It was with oil gas or Pintsch gas. I do not know whether that applies, but in a gas of that kind, which was compressed up to 220 pounds, the loss was a little inside of 2½ candles. The measurements were made by Mr. B. E. Chollar, who made them very carefully. To the best of my recollection, there was a loss of 2½ candles in the candle power between when taken before compression and after compression.

Mr. Morton—One of the points seemingly brought out by these tables is it seems impossible to tell anything about the candle power from any but a very refined chemical analysis of the gas. In one case we have 6 per cent. of illuminants and 17.6 candles, while in another we have 6.2 (a higher percentage of illuminants), and the candle power is only 9.7. Some days ago I was engaged in a discussion as to whether candle power of gas could be determined from a chemical analysis, and this seems to bear out the fact that, until we have a complete analysis of the illuminants, the chemical analysis would be very misleading.

Mr. Egner—I think this is a very important matter, and it might be well to refer it to a committee to investigate a little further. I think it would be a good idea for the Association to do that. That is the very thing that the American Gas Institute was organized for—to investigate such things. It could be done without any special expense. I hope it will be referred to somebody to investigate further and report at our next meeting.

Mr. Shelton—Mr. Jones's paper is in the line of co-operation with other Associations, if I may refer back to that. I think it will be one of the objects of the new Directors to go forward in this practical work with other Associations, especially in the line of that such as this paper which is of so much interest. I hope the new Board of Directors will consider it part of their duty to help to develop all of these problems. Another point I wish to make is that I would like to see this Institute request our Secretary to transmit to the Pacific Coast Association a sense of our appreciation for the paper tendered by Mr. Jones on this subject in behalf of that Association, and moreover, that instructions be given to the Secretary that he write a similar letter to each one of the other Associations who have been represented here by gentlemen who have read papers, such as the Natural Gas Association, the Commercial Gas Association, and the Illuminating Engineers. It seems to me we are indebted to the writer of such a paper as this, and we are indebted to those other Associations for manifesting such a spirit of willingness to appear as they have and give us the benefit of these very valuable ideas. I think the more of this kind of thing we can have the better it will be for all concerned. In passing this vote of thanks, I think that we ought to follow it up with such a letter from the Secretary. [Seconded.]

The President—Gentlemen, you have heard the motion of Mr. Shelton that we express our appreciation for the papers from our sister associations. All in favor of the motion will say "Aye." Contrary minds, "No." The "Ayes" have it, and the motion is carried. A motion to adjourn will be in order.

Mr. Shelton—Mr. President, I simply wish to say before we adjourn that the dinner has all been arranged. There have been about 125 seats taken so far. Arrangements can be made for more, if they care to participate.

The session was then declared adjourned to 10 A.M. of Thursday, October 18.

SECOND DAY—MORNING SESSION.

The convention was called to order at 10:30 A.M., October 18.

SOME TELEGRAMS.

The Secretary read the following letters and telegrams:

NEW YORK, Oct. 10, 1906.

James W. Dunbar, Sec., New Albany, Ind.—I am just in receipt of the formal invitation to attend the first annual meeting of the American Gas Institute, to be held at Chicago, Oct. 17 to 19, inclusive. I deeply regret that I shall probably be unable to attend the meeting. If my plans should change so that I could even be present on the first day, I shall certainly take advantage of the opportunity to be with you. Wishing you every success, I am, Sincerely yours,

ALEX. C. HUMPHREYS.

SAGINAW, MICH., Oct. 13th, 1906.

J. W. Dunbar, Acting Secretary, American Gas Institute: I beg to acknowledge receipt of your invitation to attend the first annual meeting of the American Gas Institute and regret exceedingly that other engagements prevent my presence. With best wishes for a successful meeting, I remain, Yours very truly, S. E. WOLFF, Gen. Mgr.

NEW YORK, 220 BROADWAY, Oct. 13th, 1906.

The American Gas Institute, care Mr. Paul Doty, St. Paul (Minn.) Gas Light Co.: On behalf of the Illuminating Engineering Society, permit me to extend to the American Gas Institute, on the occasion of your Inaugural Meeting in Chicago, October 18th, my best wishes for the success of your organization. The underlying idea of the Illuminating Engineering Society is co-operation in all that makes for the good of the science and art of illuminating engineering. With this idea in mind, our Society will be glad to get into close touch with the American Gas Institute and to co-operate with your members in all questions relating to the field of work to which the Illuminating Engineering Society confines itself. Very truly yours,

L. B. MARKS, PRESIDENT.

MIDDLETOWN, O., Oct. 17th.

J. W. Dunbar, Secy., American Gas Institute—Regret exceedingly cannot be present at the first meeting of the Institute.—G. N. CLAPP.

SAN FRANCISCO, CAL., Oct. 27th, 1906.

American Gas Institute—Pacific Coast Gas Association extends congratulations and best wishes for future prosperity. Incidentally, Pacific Coast operates to-day largest gas engine in the world, 5,333-horse power, with illuminating gas 642 British thermal units.—JOHN A. BRITTON, Secy.

NEW YORK, Oct. 10th, 1906.

J. W. Dunbar—Dear Sir: Please accept my thanks for the invitation to attend the first annual meeting of the American Gas Institute. I regret exceedingly that I shall not be able to be present, but I beg to offer my hearty congratulations to the members of the Institute, and to wish them a most enjoyable and profitable time.—Very truly yours,

E. G. LOVE.

ALLIANCE, O., Oct. 15, 1906.

J. W. Dunbar, Acting Sec., American Gas Institute: Dear Sir—Inclosed find my report as Editor of "Forms and Records." I am sorry I was unable to get it in to you sooner. I myself am sorry to say I will be tied up and will be unable to attend, much as I would like to. Hoping the first meeting will be a grand success, I remain, very truly yours,

D. W. LOW, Editor.

LONDON, ENGLAND, Oct. 18, 1906.

Gas Institute, Auditorium, Chicago—Cordial greetings to American Gas Institute. Much regret absence at birth.—GLASGOW.

WASHINGTON, D. C., Oct. 17th, 1906.

B. W. Perkins, Presiding Officer, American Gas Institute, Auditorium Hotel, Chicago, Ills.—Mr. John R. McLean desires me to say that business in Washington compels him to regret his inability to attend the First Annual Meeting of the American Gas Institute, to be held at the Auditorium Hotel, Chicago, October 17th, 18th and 19th, 1906.—Very truly yours,

H. B. DOWNS.

The President—The next matter on the programme is the report of the Editor of "Bureau of Records and Forms." Will Mr. Forstall read this report of Mr. Low's?

REPORT OF THE BUREAU OF RECORDS AND FORMS.

To the Members of American Gas Institute, Gentlemen: As Editor of the Bureau of Records and Forms of the Ohio Gas Light Association, I beg to submit the following closing report:

I do not think the result obtained from the collection, such as has been compiled by the Editors of this Bureau, is bringing out the results which were expected when the Bureau was inaugurated, which was to help to get a uniform system of blanks and records by compiling the records and forms of each company in a form to be accessible to all members of the Association. I do not think the result has been as we expected, for although any of us can go over this collection and derive a great amount of information from same, the trouble is the majority of us will take certain portions of a blank, or certain blanks, of a system, and incorporate it into our own system, but we are not willing to adopt any complete system, the forms of which are shown in the collection. How many have actually adopted the American Gas Light Association's system; and why not?

If the American Gas Institute intends to take up any of this kind of work, I would suggest that a committee be appointed to collect the complete systems of all the companies in this Institute, and compile from same a complete standard system of blanks and forms to conform to the systems used by the majority of the members of this Institute. These can be made flexible enough to apply to the small as well as to the large companies.

If these were published in pamphlet form and distributed free of cost, as the Electric Light Association did, I believe it would do a great deal toward inaugurating a standard system of accounts, and give the man who wishes to open up a new set of books a system which, when he takes off his balance, will give him some idea where he is at. I am afraid, sending a collection of blanks such as is now in my possession, would simply confuse him, and he does what the rest of us do, take a little of each.

Thanking the members of the Ohio and other Associations who helped me compile our present collection, I remain,

Respectfuliy yours, D. W. Low, Editor.

The President—What is to be done with this report?

Mr. Kenan moved that it be received and filed. [Seconded and adopted.]

The President—Is Mr. Lansingh in the room? If so, is he prepared to read his paper?

The President introduced Mr. Van Rensselaer Lansingh, of New York, who prefaced his paper on

THE STANDARDIZATION OF INCANDESCENT GAS MANTLES,

with the following remarks:

I have been asked to give this paper on behalf of the Illuminating Engineering Society, and while I am here representing that Society to a certain extent, I should like to say the Society is not responsible at all for the sentiments expressed.

When electricity first began to be a competitor of gas in the field of illumination, there was great fear among the gas interests that gas was to be supplanted by electricity, with the result that gas securities at once fell off in value, and it was some time before they recovered. It is not difficult to see why this panic arose. We can take as an average condition that gas at that time sold for $1.25 per 1,000 cubic feet (which is probably low), and that it gave approximately 16-candle power per 5 cubic feet. This made the cost to the consumer per hour ⅝ cent. for 16-candle power. If we assume that the electric lamp of that period consumed 4 watts per candle and that the cost of current was 20 cents per kw. hour, the cost to the consumer was 1¼ cents per hour for a 16-candle power lamp, or twice the price of gas. When all the conveniences of electricity were considered as compared with gas, it was seen at once that, if improvements in the efficiency of lamps and a reduction of electric rates were possible, electricity would shortly very largely displace the open flame gas burner. This reduction in the rates of electric current and improvements in lamp filaments did occur, but at the same time a new, powerful factor came to the aid of the gas industry, namely the Welsbach or mantle burner. At the time many gas companies feared that the introduction of this burner, consuming from 3½ to 4 cubic feet of gas per hour, and giving in the neighborhood of 60-candle power, would mean a serious reduction in their revenues and bitterly opposed its introduction. As a matter of fact, the mantle burner proved the salvation of the gas industry, so far as lighting was concerned, as the ordinary open flame gas could never hope to compete with electricity with the lowering of rates and the introduction of more efficient lamps. The introduction then of the mantle burner proved a most powerful factor in the gas field, opened up new sources of income to the gas company, and enabled it not only to meet electric competition, but in many cases to overcome it.

Up to perhaps a year ago the situation had resolved itself as follows: It might be taken on an average that gas was being sold for $1 per 1,000 cubic feet, and that the standard mantle burner, consuming from 3½ to 4 cubic feet (3½ under laboratory condition, 4 under actual service), was giving a candle power of 60 candles. Electricity on the other hand was averaging 8 cents per kw. hour (in many cases more and in many cases less), and the standard lamp throughout the country was 3½ watts per candle. In the large cities the customers were supplied with 3.1 watt lamps, but in the smaller places it was not unusual to find 4-watt lamps. Under these circumstances electricity for the same candle power was about 4½ times as expensive as gas.

Despite this overwhelming advantage for the gas industry, electricity, owing to its numerous advantages, has continued to grow, perhaps even more rapidly than gas, and in many cases at the expense of gas. It is not necessary here to enumerate these advantages in detail, since they are probably fully as well known to the reader as to the writer.

Attention is called, however, to one or two important advantages of electricity which are often overlooked by the gas man and which the gas engineer could do well to copy as far as possible. One of these is the ability to subdivide the light into any convenient size unit, varying all the way from powerful lamps of 100-candle power to small miniature lamps of 1-candle power or less.

2. The ability to place these different size units in just the places where they are most needed, and not attempt to illuminate a room by flooding all parts with light.

3. The ability to equip the lamp with glassware which would either direct the rays of light in ways wanted, such as opal, prismatic, etc., or else give diffusion with comparatively small losses by absorption.

During the past year the situation from the electric standpoint has materially altered; there has been, in many cases, a reduction of rates, often of a more sweeping nature than corresponding reductions in gas, but the principal change has been in the introduction of new lamps of higher efficiencies. The first lamp of this nature to appear on the market was the Gem or high efficiency type, consuming 2½ watts per horizontal candle power. This was followed by the tantalum lamp consuming 2 watts per candle power, and the electric industry is looking forward to the introduction of a new type of l amp, the Tungsten, which is promised shortly for the market at 1¼ watts per candle power. Other types of lamps such as the Osram, osmium, zirconium, kuzel, etc., give promise of even higher efficiencies, and it is confidently expected by the electric trade that, within 2 or 3 years, there will be lamps on the market with an efficiency of perhaps ¼ watt per candle or 1-7 of the present 3½ watt standard. Granting, however, that for some time to come, the 1¼ watt lamp will be as high an efficiency as will be attained in commercial practice, we see that the electric man will be able to reduce his current consumption from 3½ to 1¼ watts per candle, or a reduction of nearly ⅔ of the present cost. We, therefore, see that, with the introduction of a lamp of this type, gas will be placed in the same position, perhaps not quite as good, as it was when we had only the old style of burner and the old 4-watt incandescent lamp. The cost of electric lighting then wi'l not be greater than 1½ times that of gas and with a possible reduction to equal or even lower cost.

This is the situation to be faced, perhaps not to-day, but very shortly. Even to-day with the lamps of the tantalum type, taking 2 watts per candle, we find that electricity has a greater advantage over gas than formerly, as the cost is reduced to nearly one-half what it was. Thus if electric lighting has been able to grow at its former cost, it bids fair to grow even more rapidly under these conditions.

This then is the situation as it must be looked at and the question arises, how are we going to meet these conditions? In some cases we find there has been a union between the gas and electric interests and that gas is pushed largely for cooking and electricity for lighting, but in the great majority of cases the gas and electric companies are separate and each is competing for all the trade it can possibly get. It is, therefore, necessary to analyze the situation carefully and see what the gas men can do to meet this threatening advance on the part of electricity.

It does not seem at the present that any great advance can be hoped for in increased efficiency of the present mantle burners for ordinary use. Something has been accomplished along this line through pressure burners, but generally this means a mantle of such high intensity and high candle power that it is necessary to largely offset this added efficiency by the use of a dense diffusing globe, so that little or nothing is gained. Moreover, the use of such burners is necessarily limited. It seems, therefore, that the best way to meet this threatening competition is by the best use of the present materials available.

Up to this time the gas man has given little or no attention to the correct placing and distributing of lights or to their equipment with the best glassware for the purpose in hand. In other words, the term "Illuminating Engineering" is almost unknown to the gas man, but that the gas industry is awakening to the necessity of more light on the subject is evidenced by the great increase in the demand for such information, and the fact that the Illuminating Engineering Society, but recently formed, numbers among its members those representing the largest gas interests of the country. In the "Transactions" of this Society the gas man finds the most authoritative data on the correct us o light, and the interest in this subject is one of the growing sign that the gas man will successfully meet electric competition.

One of the latest weapons placed in the hands of the gas engineer is the inverted burner, where the natural distribution of light for ordinary illumination is far superior to the standing upright type. As far as

distribution is concerned, it is possible with the inverted burner to generally obtain with ordinary glassware, as good if not better distribution than with the upright burner, equipped with the best forms of redirecting and diffusing glassware. There are, of course, many disadvantages to day with the inverted burner, chief of which must be reckoned the discoloration of fixtures, and it would seem that the gas engineer has a fruitful field in getting fixture houses to design a line of fixtures which are especially suitable for the inverted type. Even the question of finish is important, as the ordinary brush brass or polished brass fixtures tarnish very quickly with the heat. If on the other hand, finishes such as verde antique or other dark finishes were used on both burner and fixture, the discoloration would show very much less. Of course in many cases such finishes would not be suitable, but where they can be used it will do away largely with this serious objection. The attempt to adapt the inverted burner to the present type of fixture is generally unsatisfactory, but it should be an easy matter to design fixtures which will be suitable for the inverted type, so that it will be available in many places where not suitable at present.

One trouble with the inverted burner on the ordinary fixture to-day is that it concentrates too much light directly underneath, as the fixture is generally hung rather low. If the fixture were properly designed so that it could be placed close to the ceiling and the light governed by some form of distance lighter, such as the pneumatic and electric lighters which are now on the market, extremely good results could be obtained for lighting different classes of rooms. Further, if inverted burners in small sizes should be designed so that 2 or 3 units would only consume the same amount of gas as the present unit, we could obtain, when properly placed, a far more uniform or economical method of lighting. Such units could be placed closer to the ceiling than the larger ones where the concentration of heat is an important matter. In other words, it would be possible by the burner companies constructing small burners, either of the upright or inverted type, which can probably be made as efficient as the larger standard sizes, to meet one of the advantages which the electric man has to-day; namely, the ability of placing smaller units in positions where the illumination s desired.

Another way where it is desired to use the upright form of burner is to make a more careful study of the best forms of burners and glassware, such as was given in the paper by the writer before the Western Gas Association, May, 1906. The ordinary opal "Q" globe, which has had such a phenomenal run, has been shown to be inefficient and should be replaced by better types. This paper does not admit of a fuller discussion as to how to improve the illumination by the best means available, but as this matter has been covered more or less fully in different technical papers the writer would refer to the same.

One question, however, which has been given altogether too little consideration is the question of supplying the customer not only with the best types of burners, glassware, etc., properly placed, but also with the very best mantles possible. It is not uncommon to-day to find some of the largest gas companies selling, and in many cases recommending, a mantle which retails for from 5 to 10 cents, evidently failing to realize that it is impossible to give the customer the best satisfaction from such a mantle. Most of the electric companies have long ago graduated from such elementary ideas. We find to-day the large progressive electric companies going so far as to supply their customers, free of charge, with the best lamps obtainable and selected carefully for the voltage at the customer's place of business or residence, and also maintaining expensive organizations to keep these lamps in the best possible condition. By this means many of the complaints which formerly troubled the electric companies have been done away with and they have been in better shape to meet the keen gas competition than would otherwise have been possible. When such a company buys its lamps it buys them on a set of rigid specifications. Thus the lamp company furnishing the lamps must guarantee the initial candle power of the lamp; must guarantee that it shall not vary more than 1 or 2 volts either side of the rated voltage of the lamp; must guarantee that its life will be so many 100 hours before the candle power has decreased to 80 per cent. of its initial candle power; must guarantee that all lamps be free from any mechanical imperfections, as well as fulfilling other requirements, and the question naturally arises, should it not be the policy of the up-to-date gas company to follow along the same lines? Why should not such a company buy its mantles on a set of rigid specifications, with a guarantee from the company from whom it purchases its mantles that all mantles so purchased should live up to these specifications and with a penalty attached for any which fall below the standard? If this were done, it would probably do more to make satisfied gas customers than anything else at present available.

In order to find out whether there was any material difference between a cheap mantle and a high grade mantle, the writer has had a series of tests made at the "Electrical Testing Laboratories of New York," on 40 mantles, 10 being of the highest grade obtainable, 10 of a medium grade, 10 of a still cheaper grade and finally 10 of a very cheap grade.

These four mantles are designated in the following test as Nos. 1, 2, 3 and 4. No. 1 is an asbestos-tied cap mantle supported by a ring and side rod covered with a magnesia tube, selling to the trade for 20 cents. No. 2 is an asbestos-tied, single side-rod supported mantle, the cap form of which wholesales for 13½ cents. This one was selected as it is often used with a center support. The price of the No. 2 is given in the cap form as the other 3 are of that type, and this gives a better insight into the relative values entering into the mantles themselves. No. 3 is an asbestos-tied, double rod supported cap mantle wholesaling at 8½ cents. No. 4 is an asbestos-tied, double rod supported cap mantle wholesaling for 6½ cents. The 40 lamps were all burned on gas obtained directly from the mains of the Consolidated Gas Company, New York City, at pressures from 1.4 to 2 inches of water. The lamps were mounted on 2 pipes which were drilled and tapped to receive the nipples. These pipes were fastened rigidly to the floor and wall of a large basement room, nearby machinery producing a slight vibration at certain periods of the day. The lamps were mounted 10 inches apart, 20 upon one pipe and 20 upon the other, being in rotation, Nos. 1, 2, 3, 4; Nos. 1, 2, 3, 4, etc.

It had been intended to photometer the lamps at intervals throughout the tests while in position upon these racks. As no pressure regulators were available, results obtained would have been affected by pressure variations in the mains. Therefore it was found simplest to remove the galleries to a nearby photometer room and there carry out the photometric tests. This was done, in every case the lamp being supplied with gas at a pressure of 1½ inches of water. Of course, such removal of mantles and galleries is decidedly objectionable, and the value of these tests is not so much from the standpoint of absolute values as it is to point the way for a more systematic and rigid investigation. However, as all mantles were tested alike we are able to draw at least comparative results. Photometric tests were made at the start, at 96 hours, 194 hours and 555 hours. The 194-hour measurements are not comparable with the others, inasmuch as the lamps were not removed from the rack and, therefore, there was a difference due to variation in pressure. These readings are therefore omitted in the report.

Among many of the mantles minute breaks were observed during the first hour of burning, in some cases immediately after the mantles were burned off. The rather rapid increase in the number of such breaks made it apparent early in the test that the comparison of values would have to be based upon breakages more largely than upon candle power deterioration. In this case time did not permit of the complete test upon any mantles which might be substituted for those which were broken among the first group placed upon test, consequently it was decided to run all mantles for as many hours as possible and note results. The breakage of 10 chimneys at 364 hours, however (this breakage occurring when the gas was turned off the lamps), necessitated the removal from test of a corresponding number of mantles, no replacement chimneys being at hand. Those which were in the worst condition were accordingly removed irrespective of the brand. At this time also the 5 other mantles which were unfit for further service were removed from test. All other lamps burned for at least 555 hours.

It will be seen from the above description that these tests are not at all satisfactory from the standpoint of deterioration. They do show, however, a great deal relative to the mechanical strength of the mantles. Thus, at the end of 555 hours, there were 2 mantles out of 10 of the No. 1 and 2 mantles out of 10 of the No. 2 which were in perfect condition, while none of numbers 3 and 4 were in good condition.

Tne detailed results of how the different mantles failed are not given here, inasmuch as this paper is meant to be suggestive rather than a complete study of the situation and only the general results are stated.

No.	Initial.			96 Hours.			555 Hours.		
	C. P.	Cu. Ft.	C. P. per Cu. Ft.	C. P.	Cu. Ft	C. P. per Cu. Ft.	C. P.	Cu. Ft.	C. P per Cu. Ft.
1	93 0	4.55	20.5	75.5	4.2	18.0	63.0	4.07	15.6
2	64 4	4.25	15.4	67.0	4.10	16.4	47.2	4.0	11.9
3	72 2	4.18	17.4	66.3	4.26	15.6	45.5	4.1	11.3
4	88.0	4.52	19.5	64.6	4.18	15.5	47.0	4.3	10.9

These results are shown graphically on Plate 1.

The foregoing table shows the deterioration of the different types of mantles, the values representing the mean of the different mantles tested.

Regarding the test on type 1, it should be noticed that the initial candle power falls off very rapidly during the first 100 hours, after which the deterioration is very much more gradual. The figures given are the means of the 6 mantles which lasted throughout the test of 555 hours. On examining the 10 mantles which lasted for 96 hours we find that there is even a slightly greater drop during this time so that this test shows rather conclusively that there is a decided tendency to fall off rapidly in candle power during the first 100 hours of life.

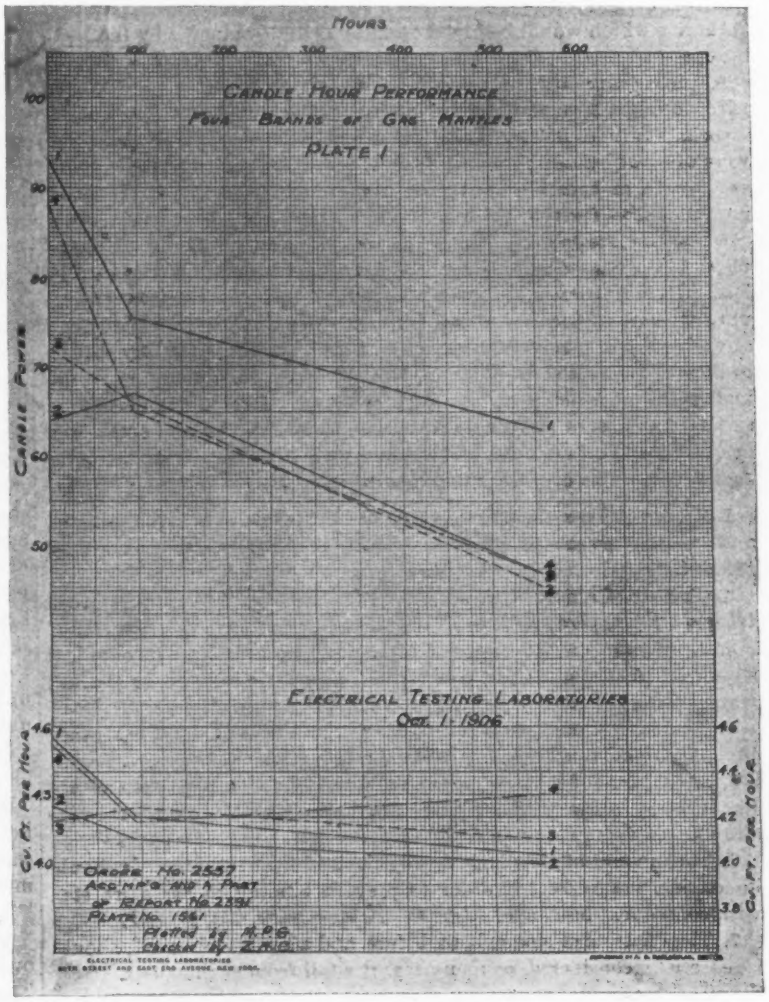
Type 2 shows that there is a slight increase in the candle power up to 96 hours. Only 5 mantles were included in these figures. In the original report if we examine the complete test for 10 mantles we find that instead of a slight increase at the end of 96 hours there is a decrease, so that in all probability a complete series of tests would show that the deterioration of this mantle was practically uniform, the same as is shown by No. 3.

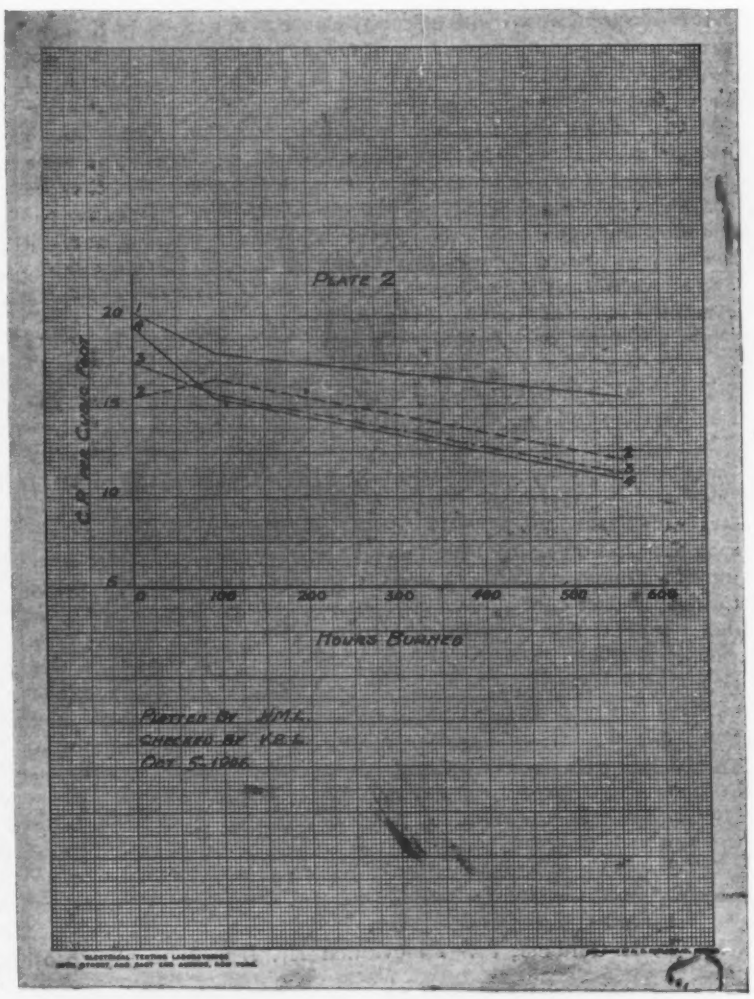
No. 4 exhibits the same characteristics as No. 1, namely, a very rapid falling off in initial candle power and a more gradual decrease afterward. The rapid decrease in No. 4, however, is greater than in No. 1.

Plate 2 shows the characteristics of these 4 mantles with reference to their efficiency or the candle power per cubic foot of gas at different periods of their lives. This plate shows as do the other tests that mantle No. 1 is of much higher efficiency than the others throughout its entire life, and that No. 4, starting off with a high initial candle power, falls below the others after less than 100 hours burning. No. 2, although starting lower in candle power than any of the other mantles, is superior with the exception of No. 1 throughout most of its life. Plate 2 gives perhaps as good an idea as is possible to obtain graphically of the relative values of these mantles and shows that their values are, roughly speaking, in accordance with their costs. It is to be noted that there is on the whole comparatively little difference between No. 2 and No. 3, as far as the light giving quality of the mantles is concerned. A breakage test, however, would show that No. 2 is superior to either No. 3 or No. 4, and No. 3 is better than No. 4. We thus see that the value of a mantle depends not only on its candle power hour performance but also on its ability to withstand the usage to which it is ordinarily subjected.

It will be noticed that No. 1 deteriorated in candle power per cubic feet of gas in the 555 hours of test about 24 per cent. and Nos. 2 and 3 about the same, showing that these 3 mantles deteriorated about equally. No. 4, however, representing the cheapest mantle tested, showed a deterioration of no less than 46 per cent. The net low efficiency throughout the life of the No. 4 mantle is largely explained by the fact that the skirts of these mantles at the cap wore off at the bottom until no longer overlapping the cap. In some part the wearing away of the skirt of the mantle may be explained by the fact that, after these mantles were burned off, in most cases they were no longer cylindrical at the bottom, the distortion causing them to rub against the cap. One thing to be carefully noted from these tests is that sometimes the cheapest mantles on the market have a high initial candle power, but that they very rapidly fall off in value. This class of mantle is largely handled by peddlers, and even by some of the gas companies in their endeavor to increase the sale of gas. The practice of putting out such mantles is decidely objectionable, inasmuch as the customer, starting off with a mantle of high initial candle power, is apt to blame the gas company for the very rapid and marked decrease in light which leads to dissatisfaction and opens up an opportunity for the electric company.

As before stated, the results of these tests are unsatisfactory. The question as to the value of mantles is a very broad and comprehensive one and is or should not be determined by any one individual. The question being, in the opinion of the writer, of such vital interest to the gas industry of this country, he would suggest that it is fitting for the American Gas Institute, representing as it does almost the entire gas industry of the country, to appoint a committee which would thoroughly investigate the subject, the proper funds for the same being supplied by the Institute. Complete tests would be too expensive for one individual or company to carry on, over 100,000 cubic feet of gas being used in the tests given in this paper, while if shared equally by those who are interested, namely, by the members of the Institute, the pro rata cost would be small,





Further, if such tests were conducted individually they would lack the authority which would be given them by being conducted by the Institute.

A similar committee was appointed some years ago by the National Electric Light Association to investigate different forms of illuminants, especially arc lights for street lighting, and the results of those tests were of great benefit to the members of the Association and the industry as a whole, and remain to-day the standard in this country. Would it not be possible for the Gas Institute to employ competent engineers to carry on such tests so that the whole gas industry would reap the benefits. At the same time this would remove all questions of commercial bias. It might even be possible to establish a permanent laboratory under the auspices of the Gas Institute, where mantles selected from any given purchase could be sent and tested, such a laboratory to fulfil in the gas field the same place as the electrical testing laboratories fulfil to-day in the electric field. Such a committee could undertake to standardize a set of tests or specifications which mantles of a given price or quality should undergo. The writer would tentatively suggest that such a committee consider the following:

1. The initial candle power on a standard gas, at a given pressure and with a given consumption should be not less than a stated amount.

2. The life of a mantle should be a stated number of hours before it falls to a given percentage of its initial candle power.

3. A mantle should undergo a jar test to prove its mechanical strength. A standard jar test could be easily arranged, so that all mantles would be subject equally to such vibrations.

4. The method of support for mantles should be stated. Tests could probably be conducted to determine the best method of support.

5. The weaves of mantles could be specified. Complete tests would undoubtedly show which weaves are best adapted for different conditions.

6. The amount of shrinkage during the useful life of a mantle should be distinctly specified, in order to prevent binding at the skirt, etc., with consequent breakage.

7. The question of shape, both before and after burning off, should be carefully considered, as many mantles fail from such causes.

8. The question of color should be carefully considered and specifications should state the color required, as different colored light is required for different purposes.

If rigid specifications with a penalty clause were adopted by gas companies and the Institute, or some standard laboratory could conduct such tests, it would be possible to select, say 1 mantle at random out of each 1,000, with the understanding that such a mantle represents the 1,000. If such a mantle falls below requirements, the entire lot would be penalized. If the large gas companies could buy mantles on some such scheme of specifications and see to it, as far as possible, that the customers were supplied with such mantles (which, of course, the gas company could guarantee), the writer believes that it would do as much toward popularizing the use of gas as any other method now available, and he respectfully suggests that the American Gas Institute appoint a committee to further investigate the situation.

Discussion.

The President—Gentlemen, this most valuable paper is before you for discussion and comment.

Mr. Egner—I shall have to start the ball rolling as I have done many times before. It was over 18 years ago when I suggested something of this kind in a paper to the Western Gas Association, and I am glad to see the topic taken up. The American Gas Institute was organized for such things as those outlined in this paper, and there should be some united action on the part of gas companies or their representatives to furnish the necessary funds. Our annual dues were not sufficient for that, but at the time inquiries were made to see if the gas companies would contribute, as has been done by the General Association of Gas Engineers in Germany. The companies contributed a certain sum and have built an experimental gas works equipped with water gas and coal gas apparatus, and all sorts of scientific instruments and apparatus to make tests such as are suggested in this paper in regard to mantles. I suppose that is one of the principle objects in organizing the American Gas Institute—to investigate just such subjects. I hope somebody will be able to elaborate what I have said.

The President—Gentlemen, here is an opportunity, if you want to get at a standard of specifications for mantles. It seems to me that this paper should be thoroughly discussed.

Mr. W. H. Gardiner, Jr.—I move that Mr. Lansingh's paper, together with the recommendations therein, be referred to a committee on candle power to be appointed by the Chair. [Seconded.]

The President—It is moved and seconded that this paper be referred to a committee on candle power, to be hereafter appointed by the Chair.

Mr. A. S. Miller—Before this is disposed of in that way, I would like to make some remarks in regard to the rather alarming tone which part of this paper carries with it. Being now an electrical man as well as a gas man, I feel I can speak from an unbiased point of of view. In the first place, the comparison of gas and electricity here is not fair to gas. In the second paragraph, top of page 138, the writer speaks of the average as being 3½ watts per candle for current conditions, or 3.1 under exceptional conditions. He also says it is 3½ or 4 feet for 60 candles. Now 3.1 watts per candle is a laboratory condition. It does not prevail in practice. The incandescent electric lamp as well as the Welsbach lamp goes down in candle power from its installation. As a matter of fact, I should say very few electric companies in this country are furnishing their customers with 3.1 watt lamps. They do not hold up to any such efficiency. The Welsbach lamps are averaging 20 candles to the foot, but very few of the electric lamps are averaging 3.1 watts to the candle. Reference has been made also to current being sold for 3 cents. Probably all of us can remember that gas has been sold for 35 to 50 cents, and I can say that current has been sold in Baltimore under some conditions at a rate of 3 cents, but current is not sold for the purpose of lighting at that price in Baltimore. I do not know where it is sold for 3 cents for the purpose of lighting, unless it is in connection with large power contracts which are taken under very exceptional conditions, and I think very few at that price. I do not think any very large amount of current is sold in this country for 8 cents.

Mr. Gartley—In connection with this motion, I understand we are now discussing the question of referring this to the committee on candle power. Does Mr. Gardiner mean the committee on photometrical work which was suggested yesterday?

Mr. Gardiner—Yes, sir.

Mr. Gartley—I hope, gentlemen, in such view that you will think over this matter carefully. I am afraid the result of combining the two investigations, which are not related to each other, would be to lessen the value of the work of the committee in either direction. As Mr. Lansingh has pointed out, an investigation of this kind would require much time and cost considerable money. I hope Mr. Gardiner will consider that the work of the Committee on Photometrical Methods will have all that it can do without adding this to it.

Mr. W. H. Gardiner, Jr.—I worded my motion in such a way, having in mind that it would be impossible for a committee of the Institute perhaps to undertake active work on this during the forthcoming year; but I thought if Mr. Lansignh's paper were referred to this committee, which is a directly allied subject, it would perhaps be the best equipped to consider the matter very carefully and report to the next meeting of the Institute. On their report such action as seemed advisable might be taken. However, if Mr. Gartley prefers it, I mould be very glad to withdraw my motion.

The President—Are there any other remarks, gentlemen? All in favor of the motion as stated will signify by saying "Aye." Contrary minds, "No." The Chair is in doubt. The "Ayes" will please arise. Gentlemen, I shall decide it in the negative; the "Nays" have it.

On motion of Mr. K. M. Mitchell, a vote of thanks was extended to the author for his very valuable work; the Chairman remarking that the paper alone was worth the trouble of coming to Chicago.

The President—Now, gentlemen, if it is agreeable to the members present, we will have a recess for a few minutes while the photographer gets in his work.

FLASHLIGHT PICTURE TAKEN.

A flashlight picture was then taken of the convention by a photographer.

REPORT OF THE NOMINATING COMMITTEE.

The President called for the Report of the Nominating Committee which was read by Mr. E. G. Pratt as follows:

To the Members of the American Gas Institute: Your Committee, to whom was assigned the duty of nominating officers for the first and ensuing year of this Association, has had an unusual task before it, and has labored diligently to place before you a list of men who, in its judgment, will meet with your approval. The greatest difficulty we have had to contend with has been that there is so much good material to select from, and without the advantage that has existed in other associations before; to wit, the rotation of men in office. In the selec-

ion of a man for president we have been guided by what we believe would be for the best interests of the Institute at this time, a man who would combine all the elements necessary to set the wheels of the Association in motion in such a way as to indicate what the future of this Association is to be. The Vice-Presidents are men well fitted to carry on the work thus outlined.

In the naming of a secretary, the committee did not feel that it was competent to decide upon the merits of a permanent secretary at this time, believing that the decision of the Institute with respect of a permanent headquarters during the year would assist in the solution of such permanent official; but it does recommend a man who has had sufficient experience in association work to fill that important position for the year, at least. The choice of treasurer has fallen to one also of large experience in association work, for it seems to your committee that, in the further organization of this Institute, with its large and growing membership, and the work that will undoubtedly be laid out for the Association requiring the assistance of an active and energetic treasurer, that such a man would be required, and your committee suggests that the treasurer have charge of the membership list.

In the choice of 10 directors, 5 for 1 year and 5 for 2 years, your committee has distributed the honors as carefully with respect to locality as seemed advisable, having in mind the assistance their individuality and interest in the Association work would give.

The Committee to whom was assigned the duty of nominating officers for the ensuing year has devoted considerable time and thought to this duty, and begs leave to report as follows:

For President—Walton Clark, Philadelphia, Pa.
" *First Vice-President*, Charles F. Prichard, Lynn, Mass.
" *Second Vice-President*—Henry L. Doherty, Denver, Col.
" *Secretary*—James W. Dunbar, New Albany, Ind.
" *Treasurer*—Thomas C. Jones, Delaware, O.

Directors to Serve for One Year.

John Williamson, Chicago, Ills.
William H. Bradley, New York, N. Y.
Thomas D. Miller, New Orleans, La.
William A. Wood, Boston, Mass.
W. B. Cline, Los Angeles, Cal.

Directors to Serve for Two Years.

Frederick H. Shelton, Philadelphia, Pa.
James T. Lynn, Detroit, Mich.
H. D. Whitcomb, Jr., Newark, N. J.
L. L. Kellogg, Sioux City, Ia.
F. W. Stone, Ashtabula, O.

Respectfully submitted
E. G. PRATT,
A. K. QUINN,
JNO. D. MCILHENNY,
E. G. COWDERY,
} Committee.

ELECTION OF OFFICERS.

Mr. Keppelman—Mr. President, I move the adoption of the report of the Committee on Nominations.

The President—I think the proper way would be to incorporate in that authority for the Secretary to cast the ballot.

Mr. D. McDonald—Mr. President, I move that the report be accepted, and that the Secretary cast the ballot.

The President—The Secretary is one of the nominees. Make it that the Chairman of the Committee shall cast the ballot.

Mr. Keppelman—Mr. President, I will incorporate that in the motion. [Seconded.]

The President—Gentlemen, it is moved and seconded that the report be accepted, and that the Chairman of the Committee be authorized to cast the ballot of the Institute for the election of these officers. Are there any remarks? If not, all in favor of the motion as stated will signify it by saying "Aye." The motion is unanimously carried. It is unnecessary to call for contrary minds. Mr. Pratt, will you cast the ballot for the gentlemen named?

Mr. Pratt—Mr. President and Gentlemen: In accordance with the instructions given me, I hereby cast the ballot of the American Gas Institute for the officers and directors for the ensuing year as read in the report of the committee. It is hardly necessary to read them again. I will do so if it is your desire. If it is not your wish, then I cast the ballot of the Institute for the officers as read.

SOME RESPONSES.

Mr. Walton Clark—Mr. President and Gentlemen: I am truly very much impressed by my emotions. You have given me an honor that I feel very deeply. Perhaps I do not appreciate it as I should, but I assure you I feel it very deeply. You have placed upon me a responsibility that I do appreciate, and which it is indeed an honor for any man to be called upon to bear. It is my hope that my every word and action in this position will meet with the approval of you, my personal friends and my professional brethren. If a man in any line of work has not the approval of those who know the job, who know what he has done and is doing at the job, then he is not a success. I want that success which will be indicated by your approval because of the way I handle the job you have put upon me. There is nothing nearer my heart than to do the work of this position so that those who know the work shall say that I have done well within my ability. I will make every effort during the year to meet your hope and to satisfy my own ambition, which, as I have just said, can only be satisfied by your approval.

The President—I am sure we would be glad to hear from Mr. Prichard.

Mr. Prichard—Mr. President and Members of the Institute: I assure you I appreciate the honor you have bestowed upon me, and I thank you for it. For many years I served on a board of directors presided over by an old gentleman, who was a philosopher and an orator. When we elected him, as we did from year to year, it was his unvarying practice to rise from his chair and say: "Gentlemen, I appreciate the honor; I thank you for it." It seems to me there are no other words in the English language, if spoken from the heart, which express the thought any better. I appreciate the honor, and thank you for it.

The President—Is Mr. Shattuck in the room? Will you read your report now, Mr. Shattuck? We are ahead of the programme, but if you are ready we would be glad to have you make it now.

Mr. Shattuck—Mr. President, this paper is a compilation of a lot of formulas. I do not think it would be very interesting to read it, and I would suggest that I do not read it. There have been no radical changes in high pressure distribution within the last year. Several elaborate tests have been made to try and prove out the best formula to use. At St. Louis the tests all indicated that the Cox computer was perfectly safe to use. The actual results of the tests showed that the large sizes of pipe followed very closely the results of the computer, but that the delivery of the smaller pipes was in excess of the results obtained by the computer. I think, Mr. President, that is all I can say.

Mr. W. Forstall—I move that a vote of thanks be tendered to Mr. Shattuck for his work. [Seconded.]

The President—It is moved and seconded that a vote of thanks be tendered to Mr. Shattuck for his report. Those in favor will signify by saying "Aye." Contrary minds, "No." It is carried.

On motion, duly seconded and passed, the convention adjourned to 2 P.M.

To be Continued.)

Municipalities Versus Electric Signs.

By MR. WILLIAM GOLTZ, in *Electrical World.*

It is a curious fact that in this age of rapid commercial progress, and in a country where business interests are paramount, there may be found municipalities—large and small—where the authorities for reasons known but to themselves, object to the installation of overhanging electric signs. Some of them have ordinances prohibiting the installation of *all* overhanging signs; others require special council permits in each instance, thus providing a source of petty graft; still others permit signs to be operated which, without permit, have been installed over night. By electric signs I mean those in which incandescent lamps form the outline of the letters and not the well-known huge billboards with the lamps concealed behind reflectors, which latter at best can only be called eye-sores. If one asks why the installation of such signs shonld be prohibited it is usually hard to get an answer, but now and then one or the other objection is cited.

It is claimed, first, that such signs might eventually interfere with and hamper the movements of the fire department. On seriously considering this objection, it seems of little value as it is practically inconceivable how an overhanging electric sign can prevent the firemen from getting hose or water to any part of a building, or from moving their apparatus to any desirable place. It does not obstruct the sidewalk, or the doors, or the street, as is done by electric light or telephone wires, merchandise piles on the sidewalk, and delivery wagons lined up on the curb. Yet all of this is usually tolerated because the people

do not seriously object, and for business reasons are willing to put up with it.

Others claim that a sign might be blown down and injure some one. Experience has shown that electric signs can be installed in such a manner that they cannot be blown down. The electric sign ordinance of the city of Chicago prescribes a method of hanging so substantial that a sign put up in accordance therewith will and does safely resist all wind storms.

This, then, seems to dispose of the objections which may be raised to the installation of overhanging signs. On the other hand, some rather strong arguments may be advanced showing why a municipality should, on the contrary, encourage their use.

It is a well-known fact that brilliant light attracts and induces street travel. People will not use dark streets unless forced to, and merchants located therein will not use display lighting because there is no one to see their windows. Taking into consideration that none of our municipalities, for financial or other reasons, have ever been able to light any streets brilliantly, it would seem that they would be anxious to avail themselves of an opportunity offered to accomplish this feat at no expense to them. Electric signs and electric display lighting furnish an illumination far exceeding in quality and brilliancy that produced by any other known method of street lighting. The real progressive merchant knowing full well the tremendous advertising power of the electric sign will, as soon as all obstacles in the way of getting a permit are removed, select this method which for a certainty will bring him the greatest return for each dollar expended. Once the start is made and a number of signs have been installed, the public will appear on the street and the merchant, in order to display his merchandise, will have to light up his show windows. The more signs there are, the more display lighting you will see, and the better they are distributed in various parts of the city the more money will be saved on the municipal street lighting account. That a city presenting a bright and lively appearance at night will soon be known as progressive and will receive the preference from merchants and manufacturers seeking location, goes without saying.

The results to be looked for from the installation of electric signs being, therefore, advantageous for any city, it should be the duty of the authorities to regulate this feature so as to accomplish the desired end in a safe and practical manner. An electric sign ordinance, while insisting upon the signs being lighted for a certain number of hours each week, and that the signs should give a sufficient amount of light as compared with the size, should be exceedingly liberal as regards facilities for obtaining permits and as regards dimensions and locations. Signs should be allowed to extend as far as the curb, if supported at one end, and to go clear across the street if supported from both ends. Nothing need be stipulated about the appearance of a sign, as the merchants will take care of that themselves by trying to outdo each other in the laudable purpose of having the best sign on the street. That properly drawn sign ordinances will provide regulation making the use of electric signs safe and desirable has already been shown by experience in some of our largest cities. Such an ordinance should contain, among others, the following provisions:

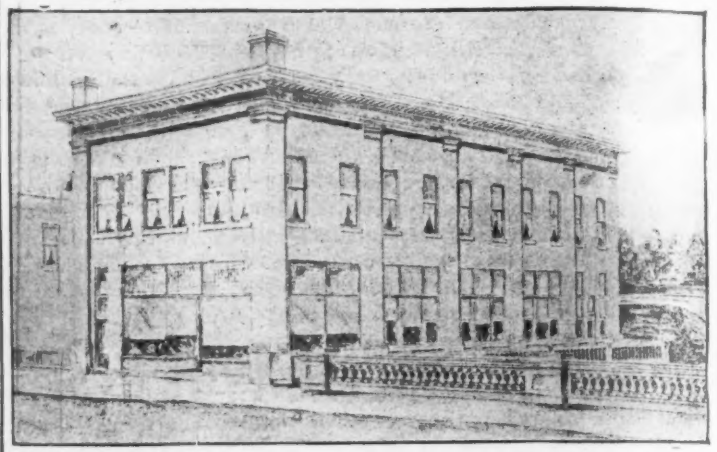
1. Application for permit, electrical inspection and inspection as to safety of installation. (Inspection should be made upon installation and annually thereafter.)
2. Obligation on the part of the owners to operate signs on week days from dusk to 11:30 P.M.
3. Rules establishing minimum number of lamps in a sign as compared with its dimensions.
4. Dimensions of signs.
5. Charges for inspection.

Owing to lack of space it is impossible to give here a model ordinance which with slight modifications might be used everywhere, but if the features mentioned are elaborated upon to suit local conditions it is safe to say that after an ordinance based thereon has been in effect for some time the results will be a cause of surprise to the city authorities who will ask in wonderment "why did we not think of this before?"

MESSRS. S. G. SMITH and F. M. Clevenger, of Wilmington, O., and A. L. Cole, of Sabina, O., have purchased a large interest in the Wilmington Gas Company from the Messrs. Clapp, of Middletown, O. In the reorganization of the management of the Wilmington concern which will take place to-morrow, it is likely that the following officers will be chosen: President, Mr. G. N. Clapp; Secretary, Mr. F. M. Clevenger; Treasurer, Mr. S. G. Smith.

The Eau Claire (Wis.) Company's Proposed New Office Building.

The illustration affords an excellent view of the proposed new office structure for the Eau Claire Gas Company. Ground was broken for the edifice the 10th of last month, and the architects promise, in fact



are under agreement, to have it ready for occupancy by June 1st, 1907. The structure will be an adornment to the city, a comfort to the Company's customers, and an immense convenience to the Company's executive and appliance staffs.

Fire Resisting Qualities of the Tin Roof.

Among the essays received by *The Metal Worker*, says the latter in connection with the competition recently conducted by it for the essay giving the best working information to the roofer in the campaign to advance the interests of the tin roof, was a specially noteworthy one, by H. O. Reese of E. L. Parker & Co., Baltimore. It was particularly interesting in regard to its convincing proof of the value of the tin roof in case of a fire in the building so protected, and offered a number of other usable suggestions on other features of the tin roof. It will be out of the question to print the essay in full, and only those parts mentioned can be printed, including some practical information about the question of importing tin roofing plates from abroad.

Mr. R——'s warehouse burned down, On the matter of rebuilding, I called to see him about the roofing. "I want the best quality of tin, same as I had before," he said. "All right, best brand and price, so much," was the reply. Several weeks later came the second call: "Haven't you got cheaper brands of tin?" "Yes, so and so," showing samples. "Well, I think that at $2.50 a box less will suit, and I will use it." Just before the roof was ready there came a third call: "Well, how about the tin roofing?" "Oh, I have decided to use slag roofing—so much cheaper. Can't do anything with you. No; made up my mind." Slag roofing is put on, pitch smeared against the walls for flashing. Tinner, our customer, called up after a very heavy rain; roof leaked all around; cost $125 to repair.

The same party was again unfortunate, and burned out in the great conflagration of February 8, 1904. I took samples of tin, and saw him when ready to rebuild. He said he wanted tin this time, and used next to our highest grade of terne plate. When his building burned down not a vestige of the slag roof could be found, and the rapidity with which the place burned was remarkable,

The New Assembly Rooms, so-called, were covered many years ago, probably 50 years, with tin. The building caught fire about 6 P.M. and burned under and along the edges of the sheathing for hours, being extinguished and starting in new places. I watched it for 2 hours, and the building did not succumb until 3 o'clock the next morning, 9 hours afterward, and then the tin roof lay all over the ruins, having fallen with the walls. It lay there for days until the rebuilding began. Good tin for roofing is the lightest, easiest repaired and the neatest roofing material that can be used; it is lightning and stormproof and a fire retardant and fire confiner.

The large warehouse of Fred. Bergman & Co., picture frame manufacturers on Pratt street, caught fire, and if it had not been for the prompt action of the fire department and the excellent tin roof, Baltimore would have had another conflagration, as the flames from the inflammable materials used, celluloid, wood, etc., burned fiercely,

The seething flames pouring from every window and under the roof leaped clear across the street, while the elevator shaft furnished a flue for the burning flames, leaping many feet high in the air and scattering sparks in all directions. Yet the tin roof stood and confined the fire to the one building. No better proof than this can be presented as to the desirability and superiority over the pitch and tar paper, etc., comprising various kinds of cheap and dangerous roofing. Fires inside a building burn the stock first, then the roof catches, and the pitch, tar, etc., which burns fiercely, runs, drops and spreads the fire in all directions, causing serious loss to the insurance company, while a good tin roof confines the fire and hangs until the walls crumble and fall. King's stable on North street was a case in point. The building in which the fire started was completely gutted, and not a vestige of the contents or the roof left. On the adjoining building the roof caught and the center of the roof was entirely burned out. Both were covered with pitch, tar paper and slag. The house adjoining was covered with tin and suffered no damage whatever. Numerous cases can be cited of this character. Take the large, expensive fires that have occurred along the docks of New York. With sheds covered with gravel and slag roofs, the burning pitch adds to the fire and assists in consuming the valuable goods on the wharf, while the sheds themselves are expensive in comparison.

As to the desirability of slag roofing when put on, note their advertisement: "If 3 roofs out of 20 (and estimates are usually small) require repairing during 10 years, at this rate 150 out of every 1,000 would be in the same fix, and this if from the best slag used. After 10 years you can repair it at your own expense and pay the price."

We have the same complaints confronting us to-day that we had 15 and 20 years ago when importing. Our customers complained of the quality, both in working and finish. The many letters written to Liverpool about the poor quality of both terne and bright tin plates, badly coated, poorly assorted, burnt material, as much of it would break in working, but there was no improvement. In our efforts to correct this we offered to pay more for better material if we could get what we wanted, but were informed by the commission agent that it would be money wasted, as they would make it no better. To prove this we shipped back out of a new consignment, as requested by their agent and selected by him, 1 box, 14 by 20 size, every board and nail as originally shipped. Upon its arrival in England the manufacturer disclaimed it as his make, although his own mark was upon the box, and though he admitted the poor quality of the tin.

Has the dealer or the tinner considered the many changes that have taken place in the past 20 years, and is he aware that there is more or as much tin roofing used to-day in proportiou to the population and the number of buildings erected as there was then, notwithstanding the many other kinds of roofing, such as corrugated iron, crimped iron, steel roofing, etc.? Finally it may be added that as to tar paper, pitch slag and gravel these same roofs were forbidden in New York some 25 years ago.

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, Dec. 8th, 1906.

Nothing Better Than a Swindle.—A Gas Exhibition to be Held at Manchester.—Modern Gas Distribution and Supply.

The remarks made by Mr. Justice Joyce, in respect to a case brought before him at the High Court of Justice, while being anything but comfortable reading to the parties to whom they refer, should be read, marked and inwardly digested by all persons who are in the habit of investing money in concerns that they are personally ignorant of on the faith of a printed prospectus. That such documents are used to a very large extent, and found to be a more or less successful means of raising capital, is evident by the fact that anyone who takes a few shares and so acquires a position as shareholder of a registered company is at once the recipient of a very liberal supply of this class of literature. If he happens to be interested in, say a dozen concerns, the chances are that he will receive a corresponding number of copies of certain prospectuses.

Personally, I never found any difficulty in selecting a sound investment. The trouble was to get the wherewithal to invest. But it would appear that there are many people who have more money than they know what to do with. It only seems ordinary commonsense, before investing, to find out something about the general business or the particular undertaking selected, in addition to the information furnished by the promoters. When buying a house or a plot of land the usual course is to inspect it before completing the purchase, if not to consult an expert as to the value. But it seems a common practice to invest a similar value in joint stock shares without any competent inquiry. And it is not everybody who, having exhibited such an obvious lack of ordinary business capacity, is able to recover his money.

Twenty-three shareholders in the "Kent County Gas Light and Coke Company," Limited, sought to have their names removed from the register and the money paid for shares reimbursed. As they were successful in this application and received their money back with 4 per cent. interest (a larger profit than the other shareholders are likely to get), and also were granted costs, it may be assumed that they proved their case. The arguments they advanced were that the prospectus did not represent the facts and was of a misleading character. The company was not a county undertaking, but was intended to acquire, at a cost of £21,800 in cash, a small concern in a village of less than 3,000 population, supplying some 3 million cubic feet of gas a year, and which was sold a year ago for £2,350. The village was not, as stated, an important center, and could not possibly yield a profit sufficient to pay dividends on the large capital. Use had been made of the name of a well-known gas engineer as Chairman of the Company, but it was proved that he withdrew from his position before allotment. Mr. Justice Joyce, in giving judgment, characterized the prospectus as a cunningly devised document, and he did not think he had seen one more artfully framed to entrap the unwary and inexperienced. He had no hesitation in expressing the opinion that the bringing out of this Company was nothing better than a swindle. His view of the law was that if a person who was induced to take shares by the prospectors could prove misrepresentation of material facts, he was entitled to be released from his contract, and accordingly granted the application.

It is only fair to the *Journal of Gas Lighting* and to the *Gas World*, to say that both publications plainly indicated the nature of the investment at the time. Some of the financial papers also took the matter up; and the wonder is, not that the 23 shareholders wanted their money back, but that they ever parted with it. Seeing that any respectable gas venture need find no difficulty in raising capital at very low rates, a prospectus offering apparently valuable shares at par, or unusually high rates of profit, may at once be looked at with suspicion.

A special feature at the usual quarterly meeting of the Manchester District Institution of Gas Engineers, which was held at Salford a few days since, was the report of the Advisory Committee in reference to a proposed exhibition of gas appliances. The Committee have made all the preliminary arrangements for the holding of an exhibition at a suitable building in Manchester, under the title of "An Exhibition of Gas Appliances (Industrial and Domestic) and Gas Lighting." It will be opened on October 23d and remain until November 9th, 1907, and the sections include outdoor and indoor lighting, cooking, heating, ventilating and motive power, industrial uses, and also coke stoves, tar products, models of gas plant, testing apparatus, etc., and the Committee desire to make a special effort in regard to individual uses. Having this particular subject prominently in mind, one can understand why it is given the first place in the title. But it is not so easy to explain why industrial uses should take precedence of domestic cooking, lighting and heating, which are the very backbone of the industry. Where would the sales of gas be to-day if the business depended upon industrial uses. They are all very well in their way, as an auxilliary department, and may be a good stick, but are a bad crutch. They cannot compare, in respect to regular, constant demand, with domestic consumption, and are liable to variations with the state of trade. Arrangements have been made for the allotment of spaces, etc., and about 40 undertakings, including some of the largest in the neighborhood, have promised support. The report was accepted with very little discussion. Those who are interested in this subject may remember my remarks on the Earls' Court Exhibition, especially in regard to the distance that the average gas consumer may be willing to travel, in order to attend a gas exhibition. The Institution are to be congratulated on their vitality, which is evidenced in other directions besides this venture, and with the experience gained at Earls' Court and elsewhere a satisfactory result may confidently be anticipated. Even within the last 12 months a sufficient number of novelties have been forthcoming to give a fresh tone to the show, and prevent it from being a colorless replica of previous similar efforts. The Committee desire to furnish an object lesson to the public, to gasfitters, plumbers, architects and manufacturers, and all interested in smoke prevention, and point out that this is the first really representative gas exhibition in the district. The good effect of the whole show as a big advertisement should not be overlooked. The beneficial effects in this direction will be as marked in the north country as they were in the London

District. Mr. Thomas Newbigging is the President of the Committee, which also includes one or two other well known names, that taken alone would be regarded in the profession as guaranteeing the success of the venture. We shall watch with great interest the development of the scheme, various details of which are no doubt under consideration.

Another feature of the meeting was the rescinding of a resolution passed some time ago in favor of the establishment of a Question Box, as the idea was absolutely unsupported by the members. Four questions had been suggested by the Committee, but not a single answer had been received, nor had any other question been sent in. The scheme was brought forward as a means of extending the knowledge of the members, and perhaps of the industry at large, but these expectations were not realized, and under the circumstances the Committee were unanimously of opinion that it should be discontinued. The plan has been discussed by other district associations, but I believe this is the only attempt to put it into practical form, and the results seem to show that the Question Box is not an English Institution. When there is a general complaint as to the scarcity of papers for the proceedings, it is obvious that if members will not get up papers, they are not likely to undertake answers to questions.

Just at the time when the report on distribution was being issued by the Revision Committee of the American Gas Institute, the subject was attracting some attention here. It was discussed at a meeting of the Southern Junior Association and in our technical press. The difficulty appears to be that in many districts the whole operation is conducted on the lines of 50 years ago, the only attraction besides enlargement of mains, being an increase of initial pressure at the works. The system answered very well when gas was used for lighting only and that, over limited districts, when the day consumption was a negligible quantity and the demand commenced at dusk and continued till bed time. The man in charge at the works knew exactly what to expect and I could regulate the pressure to suit. The first important change is in regard to the area supplied. Townships have tended to grow and expand, suburb after suburb has been added, with the result that the comfortable little district of half a mile square or so has expanded into a large, straggling, irregular-shaped area of consumption, extending perhaps some miles in one direction and an equal distance or nearly so in others. The attitude throughout the district is variable and the same as regards the consumers per mile, and the maximum demand per mile of main. It is impossible to control the meter inlet pressures all over such a district from one point, and that probably nearer the outside than in the center, but to meet the case as nearly as possible, large mains are laid and the various lines are coupled up wherever possible. Going over to the consumers' side of the meter, we find the lighting gets supplemented by all sorts of appliances for cooking, warming and motive power. To some extent the temperature, meal hours, times of work or of recreation, etc., determine the rate of consumption; but there is no approach in this respect to the regular lighting up at dusk and turning out at 11 o'clock. Then to a large extent the sizes of pipes are based on the old lighting lines. Many persons who claim to be gasfitters are entirely ignorant of the laws governing the flow of gas through pipes, and if a gas stove requiring 50 cubic feet per hour at full pressure will not take a satisfactory supply through a pipe that was originally laid to supply a lighting burner with 50 cubic feet per hour, are ready with a voluble explanation to the effect that the gas company are at it again, screwing down the pressure in the mains to reduce their loss by leakage, or any other excuse that sounds plausible, if it is altogether wide of the mark. Modern requirements in the way of gas supply demand that the district shall be supplied from more than one point, and that in any case there is a limit to the area or the number of consumers that can be controlled at one place. In regard to existing systems, considerable improvement can be effected by the laying of feeder or booster mains direct into the heart of the busiest districts, and where the consumption is on a scale of sufficient magnitude, by the use of district governors. The gasfitter and consumer must be taught to use sizes of supply pipe adapted to the work to be done, and especially that in the case of atmospheric burners the full available pressure is required at the nipple, and that if half or more of such pressure is expended in drawing the supply through small pipes, the result will not be satisfactory. Some attention should also be given to the effective pressures at which appliances develop their full value. The general demand is for more pressure. We are already close up to the natural gasholder pressure. And if this requires to be assisted by artificial or mechanical means, the question of cost must be considered. Probably the use of machinery as a temporary auxilliary to tide over periods of heavy demand will become very general. The same may be said as regards high pressure feeder mains and district governors.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

MR. PAUL RAY, General Manager of the Albion (Mich.) Gas Light Company is receiving a great many expressions of satisfaction over the business done during the year, the congratulation, of course, coming from the shareholders. The Company has declared a 2½ per cent. semi-annual dividend on its shares, the payment being No. 5 in the Company's history. The result of the year's trading is a gain of 17.42 per cent. over that for the preceding twelvemonth, and the prospects are that the gain for 1907 will not be a bit behind the figures for 1906.

MR. LOUIS D. KELSEY, Manager of the Brookfield (Mo.) Gas, Electric and Heating Company, has been retained as consulting engineer by the people in interest over the proposed gas plant for Mexico, Mo.

THE distributing main system of the Oklahoma City (Okla.) Gas and Electric Company is to be increased by the placing of 4 miles of pipe.

AT the annual meeting of the Petoskey and Bay Shore Gas Company, of Petoskey, Mich., the Directors elected were: E. G. Filer, J. T. Hirschman and T. Fachtman, of Petoskey; and J. T. Byrne, C. E. Harte, E. J. Palmer and H. T. Heald, of Bay City.

MESSRS. ROSSMAN & MASON, of Keene, N. H., have secured a controlling interest in the Greenfield (Mass.) Gas Light Company. The new owners will make the expenditure necessary to put the plant in good working condition, which means the disbursing of at least $50,000.

THE City Council, of Hamilton, O., will advertise for bids for the leasing of the municipal gas works to parties competent to operate such a plant.

"DR. H. B. HARROP, whose good work in connection with the scientific division of the staff of the Milwaukee Gas Light Company is known to many, has been appointed engineer of works to the Tramway, Light and Power Company, of Rio Janeiro, Brazil. His associates in the Milwaukee Company tendered him a dinner in the banquet hall of the Milwaukee Athletic Club, the night of the 15th inst. His comrades aptly thought that this was an excellent plan for getting all together so they might tell their thought about him to his face. They did so well that the Doctor alternately blushed and paled, and in responding, he proved himself an excellent stutterer. Mr. S. J. Glass, who used to boss the Doctor, made the speech of the evening, and the Doctor will never forget it. Besides Manager Glass, there were present Messrs. Ewald Haase, Bryce McAdam, John Mason, R. P. Kraft, H. Harman, F. J. Rutledge, R. C. Cornish, G. F. Gregg and J. H. Walker.—R."

"MR. HENRY REID, who resigned from the service of the Fulton County (N. Y.) Gas Company, to accept a position on the staff of the Tampa (Fla.) Gas Company, just prior to his leaving Gloversville, was the guest of honor at a dinner given by 10 of his associates. The Touraine was the sheltering place, and the innkeeper did his best, which best was superlative. Mr. Harry Lewis was the toastmaster and when the cigars were lighted he rather astounded Mr. Reid by presenting him with a handsome smoking set, the speech accompanying the presentation being also in Mr. Reid's superlative vein. In replying the guest did the best he could, and it was good enough to be indicative of the fact that Mr. Reid was thoroughly appreciative of the spirit and purpose that prompted his hosts.—W. V."

THE City Council, of Louisville, Ky., recently adopted the following resolution:

Whereas, There is general complaint of the excessive prices charged by the Kentucky Heating Company for the natural and artificial gas furnished to its patrons for heating and cooking; be it

Resolved, That the City Attorney is requested to investigate whether the city of Louisville has the power to regulate by ordinance the rates charged by the said Kentucky Heating Company, and he is further requested to make at his earliest convenience a written report covering all the legal questions involved in this inquiry.

SUPERINTENDENT FOTHERGILL has been authorized to announce that, beginning February 1st, the selling rate for gas in Greenville, S. C., shall rule at $1.50 per 1,000 cubic feet. The current rates are: On illuminating account, $2 per 1,000; for fuel use, $1.70 per 1,000.

THE annual meeting of the Lincoln (Neb.) Gas Company will be held at the home offices the 7th prox.

MR. LOUIS B. WESTON has resigned from the service of the Grand Rapids (Mich.) Gas Light Company, in order to accept a responsible place on the commercial staff of the Chattanooga (Tenn.) Gas Company. Control of the Chattanooga property was recently secured by the Childs-Hulswit Company, of Grand Rapids.

THE New York State Commission of Gas and Electricity has postponed the inquiry into the gas supply of Buffalo to the 22d prox.

THE Columbia Company will assume control of the properties of the Cleveland Gas Light and Coke Company and those of the Cleveland Gas Light Company to-morrow. The necessary papers are in preparation by the law firm of Squires, Sanders & Dempsey. The shares assenting to the terms of the change in ownership number 95 per cent. of the total.

THE plans for the magnificent new office headquarters for the Detroit City Gas Company have been accepted, and work under them will go on immediately. The building is to be erected on the plot at Clifford street and Washington boulevard, and the cost of the ground and structure will exceed $250,000.

MESSRS. W. T. WRIGHT and C. B. Wright, have instituted suit to set aside the sale of the plant, franchises, etc., recently carried out in the name of the Tacoma (Wash.) Gas Light Company. Plaintiffs in their notification of suit declare that they attended the meeting of shareholders, held June 12th last, and protested against the sale, and that their protest was ignored; that the pretended sale, procured without adequate considerations, was made in fraud of the rights of the plaintiffs and other stockholders, and that the real value of the assets of the Company was greatly in excess of the $50,000 paid-up stock in the Tacoma Gas Light Company, which was the consideration agreed upon.

DURING the year ended the 1st inst., the Los Angeles Gas Company made to the city of Los Angeles 5,244 applications for permission to open the streets. The total receipts on such account on all classes by the city was $15,318, of which sum over one-third was paid in by the Company named.

MESSRS. CHARLES B. KELSEY and C. H. Geist have sold to Eastern capitalists the entire capital stock of the South Bend and Mishawaka Gas Company.

THE New York, New Haven and Hartford Railroad Company has purchased the plot on which was formerly located the North End commercial street plant of the old Boston Gas Light Company. It is said that the price paid was quite well in excess of $250,000.

THE first annual meeting of the Union Gas and Electric Company, of Cincinnati, will be held next Monday. It is not likely there will be any change of moment in the executive staff, which is now working with the greatest possible precision and harmony. President Kenan seems to be gaining greater fame as a skillful tactician each day.

SOME nights back, Councilman Richards appeared before the Committee on Light of the Richmond (Va.) City Council, urging the adoption of a resolution providing for a proposed labor time schedule, to be put in force respecting the employees of the city gas works. Chiefly, the schedule proposes the placing of the men on 8-hour shifts, instead of 12 as at present.

MR. A. E. BALDWIN and his associates in the ownership of the property, are to congratulated over the satisfactory completion of the revamping of the plant of the Sedalia (Ills.) Light and Traction Company. The new retort house and its equipment are of the modern sort, and the new holder (which is 4 times the capacity of the old one) is about "the tallest thing outdoors" in wideawake Sedalia. The cost of the betterments is $20,000.

MR. C. H. GEIST says he surely will construct an artificial gas plant n Plymouth, Ind. The franchise provides that a selling rate not in excess of $1.35 shall be charged. Ample enough, to say the least.

THE acetylene central station gas plant that has been in operation in Millbrook, N. Y., for some years, was badly shaken by an explosion which occurred some days ago in the generating room. Strange to say the damage done was not extensive, for as a rule when such explosions take place the segregating of the parts is thorough; in fact, permanent.

THE Pawtucket (R. I.) Gas Company has again secured ascendancy in the management of the affairs of the Pawtucket Electric Company, at least that would so seem from the returns made respecting the recent election of an executive staff. Those chosen were: Directors, Fred. W. Easton, Howard W. Fitz, S. A. Jenks, Darius L. Goff, George M. Thornton, Stedman Buttrick and F. B. Bemis; President, Stedman Buttrick; Vice-President, S. A. Jenks; Secretary and Treasurer, Howard W. Fitz. He who travels slowly travels safely; and he who travels safely travels far. And it was keeping to the rate of travel specified that eventually enabled that suave and thoughtful pair —the political Mr. Easton and the dashing Captain McGregor—to again be put in control of their own.

"F. R. J." is informed that the engineer in charge of the construction of the plant of the Suffolk (Va.) Gas Company, is Mr. W. H. Bonduran, 426 Walnut street, Philadelphia, Pa.

THE new proprietors of the plant of the Fishkill and Matteawan (N. Y.) Gas Company, who are really the owners of the Southern Dutchess Gas and Electric Company have decided that a gas exhauster would be a useful thing to have in the house, and after these many years the P. H. & F. M. Roots Company will furnish it.

THE Providence (R. I.) Gas Company for some time back has only required a $5 deposit instead of $8 as a guarantee from applicants for a gas service that their accounts will be promptly paid. The Company allows 4 per cent. interest on such deposits.

AT the annual meeting of the shareholders in the Petoskey and Bay Shore (Mich.) Gas Company the Directors elected were: E. G. Filer, J. F. Hirschman, F. Fachtman, C. E. Tare, J. K. Bruce, E. J. Palmer and H. T. Heald.

MR. THOMAS NEVINS, formerly well-known in the industry through his active connection with the gas properties in the Oranges, N. J., has made a fortune through his mining speculations in the Cobalt district.

THE New York Commission of Gas and Electricity has authorized the Poughkeepsie (N. Y.) Light, Heat and Power Company to issue convertible debenture bonds for the sum of $150,000.

A CORRESPONDENT in New Haven, Conn., forwards the following: "Gas meter tappers, it is thought by tenants and the fire officials, were responsible for an explosion and fire some days ago in the 6-family apartment house at 74 Arch street, New Haven, which, but for the prompt arrival of the fire department, would probably have done much damage. Fred Epstein, janitor of the building, heard someone prowling about in the cellar at about 6 o'clock, but thought it was one of the tenants at the time. Later a strong odor of escaping gas attracted his attention. He started down in the cellar with a lighted lamp to look for the leak and there was a sudden explosion. Epstein rushed out crying fire. Patrolman Kerrigan rang in an alarm from Box 154 and the apparatus soon arrived. Three gas meters were enveloped in flames, endangering four other meters nearby, and a more serious explosion was feared. The firemen managed to shut off the gas entirely and after putting out the blaze found that thieves in tapping the meter had wrenched loose the pipes and caused the escape of gas which caused the fire."

MR. EDWIN C. PEEBLES has been appointed Superintendent of the plant at Leominster, Mass.

A CONTRACT has been let for the erection of a 500,000 cubic foot storage holder, to rest in steel tank, and to be completed by June 1st, for the Easton (Pa.) Gas and Electric Company. The builders are Messrs. R. D. Wood & Co.

AT the annual meeting of the Waynesboro (Pa.) Gas Company the following Directors were elected: W. H. Brown, E. Elden, J. W. Augston, William Middlekauff, G. E. Buler, M. T. Brown and Charles W. Schaibley.

THE Brooklyn Borough (N. Y.) Gas Company has bought 8 acres of land on the north shore of Coney Island Creek, on which a new plant will be constructed. The property is directly to the rear of Luna Park, and has a frontage of 1,500 feet on the north shore of Coney Island Creek.

MESSRS. O. S. HEYDEN, of Petoskey, and W. H. Selkirk, of Boyne City, Mich., have been granted a franchise for the construction an operation of a gas plant in Boyne City.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHAS. E. SANDERSON,
MANAGER.

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NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, DECEMBER 31, 1906.

The Market for Gas Securities.

The city gas share market was altogether in the hands of the "washers" last week, and they succeeded in driving the final value full two points. One representative of the Christmas tree objecting race is known to be short quite well over 1,000 shares of Consolidated, and the chances are that there will be less in his stocking shortly after the Christian New Year.

Brooklyn Union is bid 110, and it will be 125 bid before the first of March. Peoples, of Chicago, steadily maintains its recent advance, and it is surely a buy at anything under par. Baltimore Consolidated is offered at 90. Mr. James T. Lynn, President of the National Gas, Electric Light and Power Company, announces that dividend No. 5, of 3 per cent. on the preferred stock, is payable to-morrow, to shareholders of record, the 20th inst. Checks will be mailed from the home office in Detroit.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

DECEMBER 31.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	137½	138
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	101	104
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	..	105
Mutual	3,500,000	100	190	205
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	98½	100
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p.ct.	1,000,000	..	98	104
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	101	103
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	108	111
Con. 5's, due 1945, J. & J.	1,500,000	..	104	110
Standard	5,000,000	100	140	160
Preferred	5,000,000	100	165	175
1st Mtg. 5's, due 1930, M. & N	1,500,000	1,000	104	108
The Brooklyn Union	15,000,000	1,000	110	120
1st Con. 5's, due 1948, M. & N	15,000,000		107	..
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Bay State	50,000,000	50	5/16	¾
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	..	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	9	10
" " Bonds, 5's	5,250,000	1,000	75	80
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	106¾
Cincinnati Gas and Electric Co.	29,500,000	100	98	99
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	90	..
Columbus (O.) Gas Lt. & Heating Co	1,582,750	100	..	95
Preferred	3,026,500	100	107½	108
Consumers, Toronto	2,300,000	50	200	204
Consolidated, Baltimore	11,000,000	100	.	90
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	..	..	100
Detroit City Gas Co	5,000,000	50	..	50
" Prior Lien 5's	4,618,000	1,000	..	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	95½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	110	112
" Bonds, 5's	10,500,000	..	107½	108½
Indianapolis	2,000,000	..	60	70
" Bonds, 5's	2,650,000	..	104½	105
Jackson Gas Co	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	05
Preferred	2,500,000	100	95	110
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	85	87
Massachusetts Gas Companies of Boston	25,000,000	100	61½	62
Preferred	25,000,000	100	85¼	85½
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	6,000,000	..	137	138
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	98	98½
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	30,100,000	1,000	..	..
" 2d "	2,500,000	1,000	104	..
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	104½	105½
San Francisco, Cal.	15,800,000	100	..	..
St. Joseph Gas Co. 1st Mtg. 5's	751,000	1,000	92	..
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	800,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¾	..
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	102	..
Washington, D. C	2,600,000	20	285	287½
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
Wilmington, Del.	600,000	50	250	..

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DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO.,
N. W. CORNER BROAD AND ARCH STS.,
PHILADELPHIA, PA., Dec. 12, 1906.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Jan. 15th, 1907, to stockholders of record at the close of business, Dec. 31, 1906. Checks will be mailed.

1645-4 LEWIS LILLIE, Treasurer.

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1646-tf Care this Journal.

Position Wanted.

A Capable Manager and Superintendent,

Now employed, desires a position as manager or superintendent of gas, or combined gas and electric plants, in city of 15,000 to 25,000 population. Successful record. Southern or Middle States location preferred.

Address, "P. T. A.,"
1647-tf Care this Journal.

Position Wanted

By a young man 24 years of age, now employed as head bookkeeper and cashier of gas company, who will make a change on Jan. 1, 1907. Can take full charge of office, experienced in every department of gas office work and the handling of coal, tar, coke, fixtures and pipe. Would like to correspond where there is a position open at above given date.

1647-1 Address, "C E. A.," care this Journal.

Wanted, Position

As Manager or Superintendent,

By man of experience and ability. Competent to show good results. Middle West preferred. Address, "C. H.,"
1647-1 Care this Journal.

Position Wanted

As Foreman of Gas Company Fitting Department

In city of 50,000 to 100,000. Best of references. Address, "S. S.,"
1647-1 Care this Journal.

WANTED.

Man wanted who is familiar with the distribution and office department of a gas company and capable of taking charge of new business department. Address, stating age, experience, and salary expected,

THE DALLAS GAS COMPANY,
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A Young Man as Superintendent of a Water Gas Plant in a Town of 10,000 Inhabitants.

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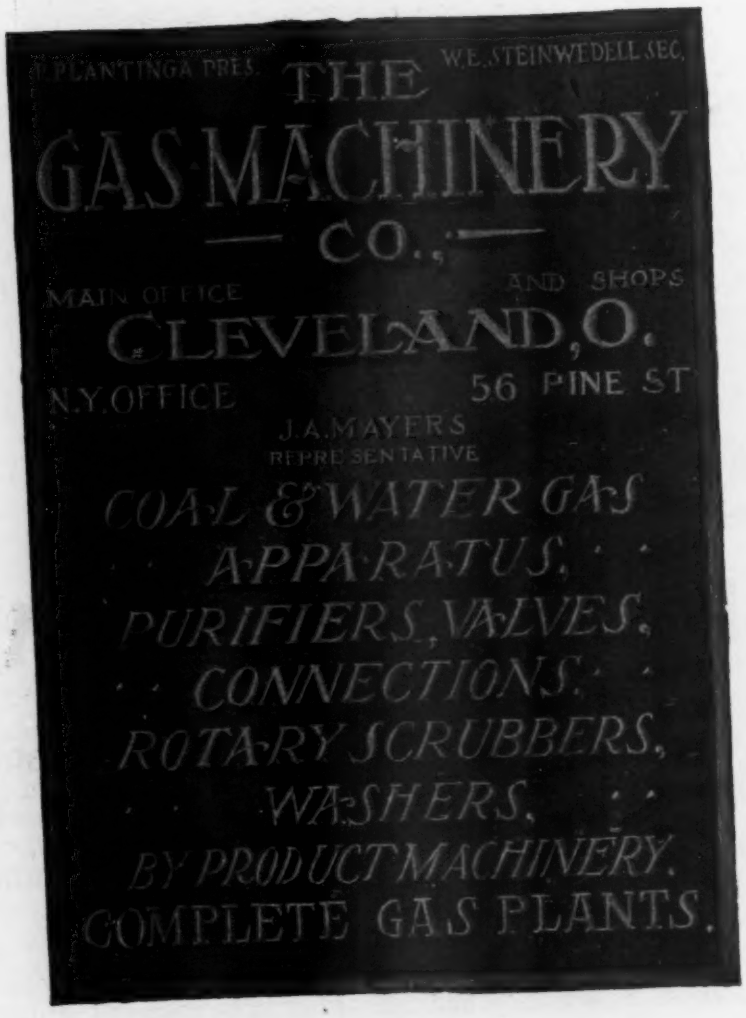
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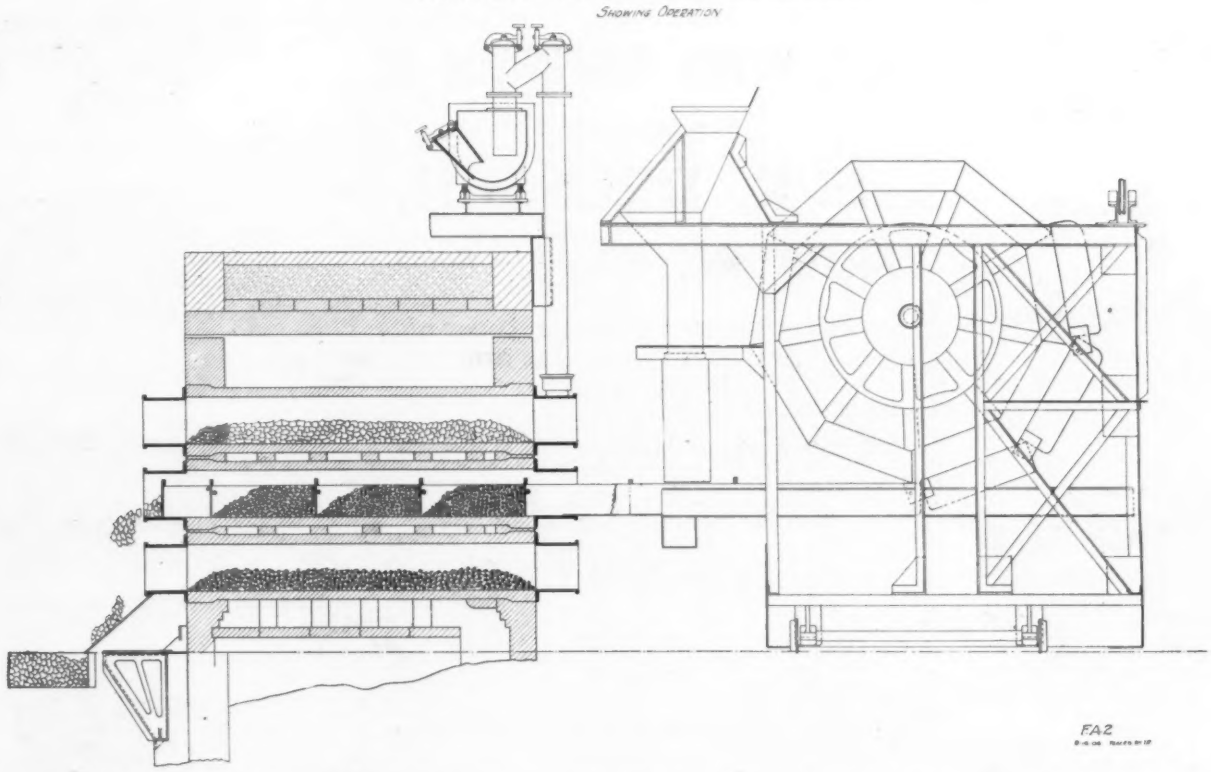

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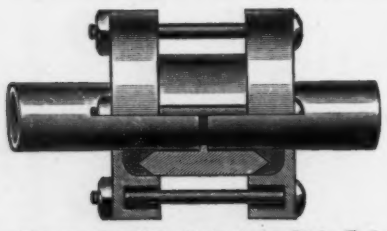
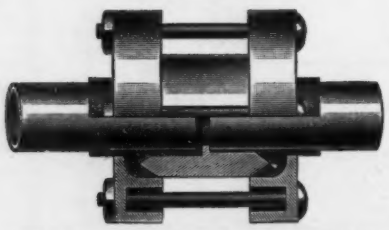
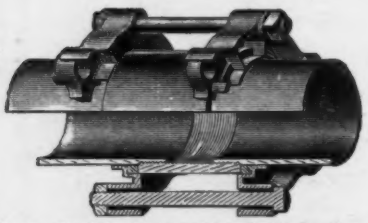

Regular Coupling, Style 1, for Plain End Wrought Iron Pipe.


Insulating Coupling, Style 5, for Plain End Wrought Iron Pipe.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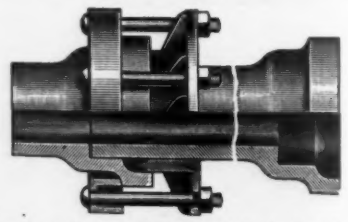
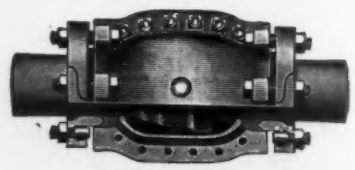
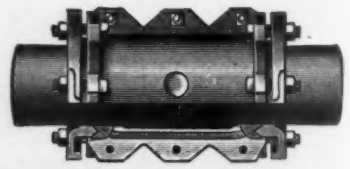
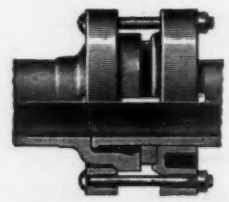

Coupling, Style 9, for Special Style Cast Iron Pipe.


Split Sleeve for Repairing Broken Bell on Cast Iron Pipe.


Split Sleeve for Repairing Broken or Cracked Cast Iron Pipe.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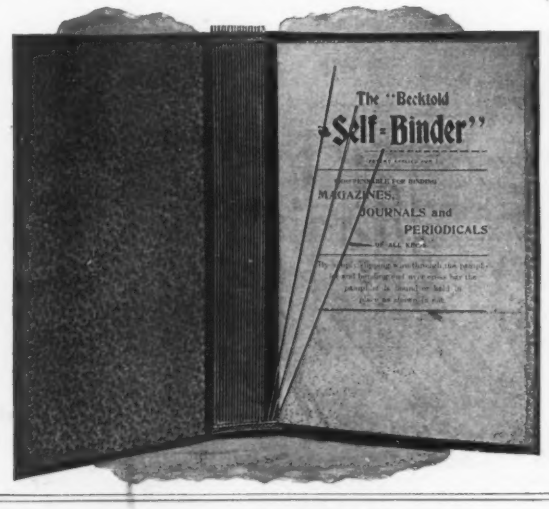

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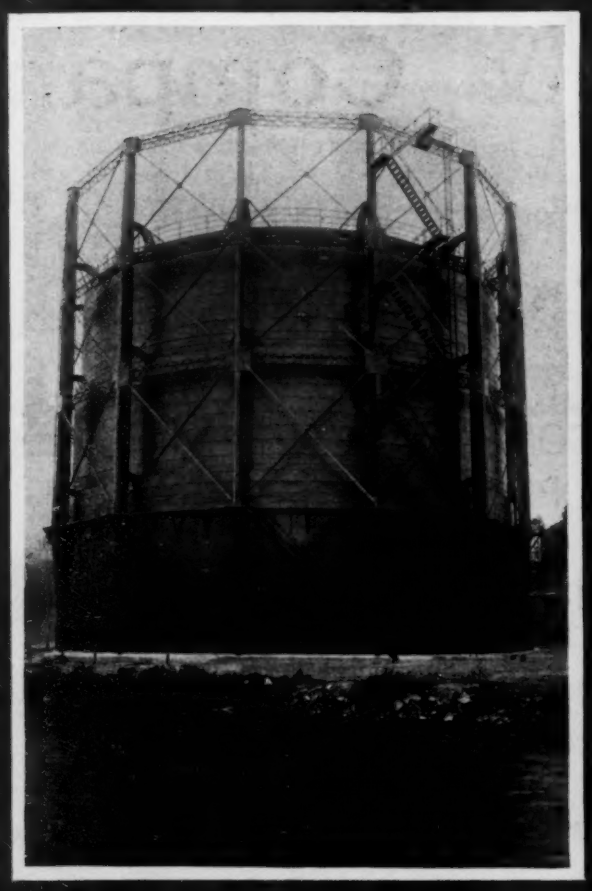

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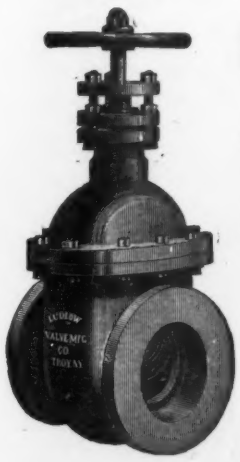

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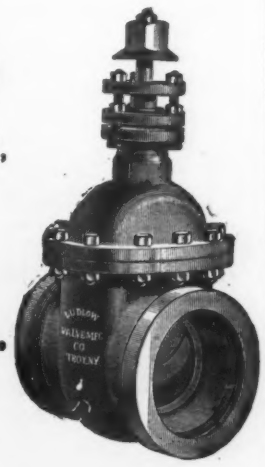

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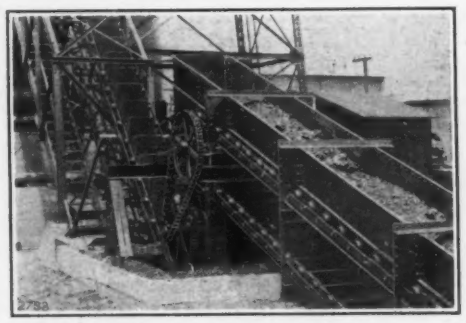

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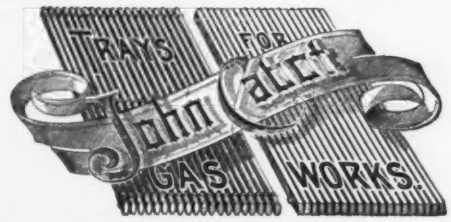

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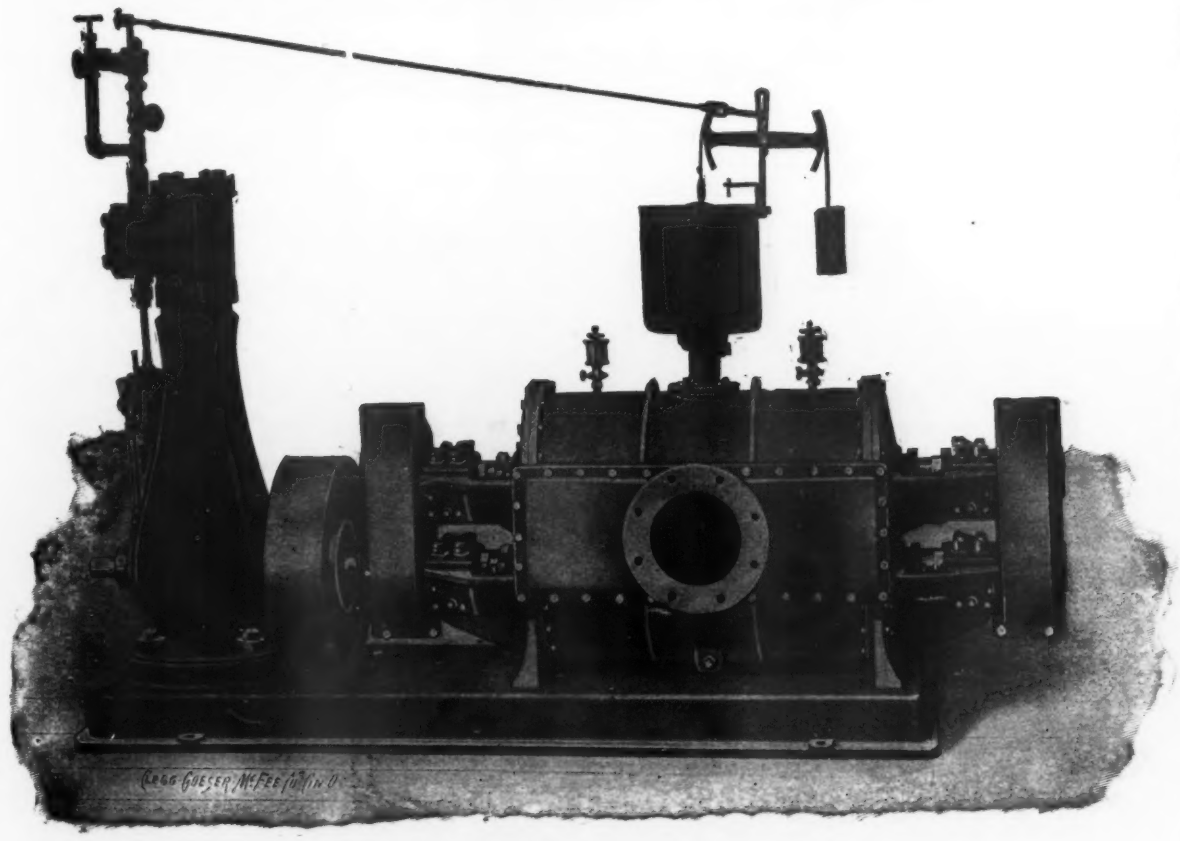

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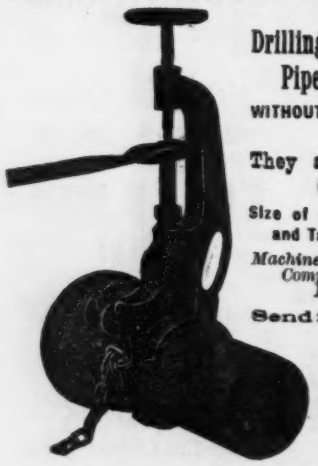

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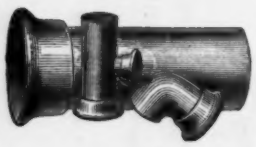

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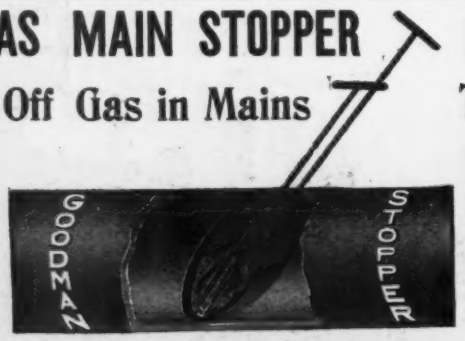

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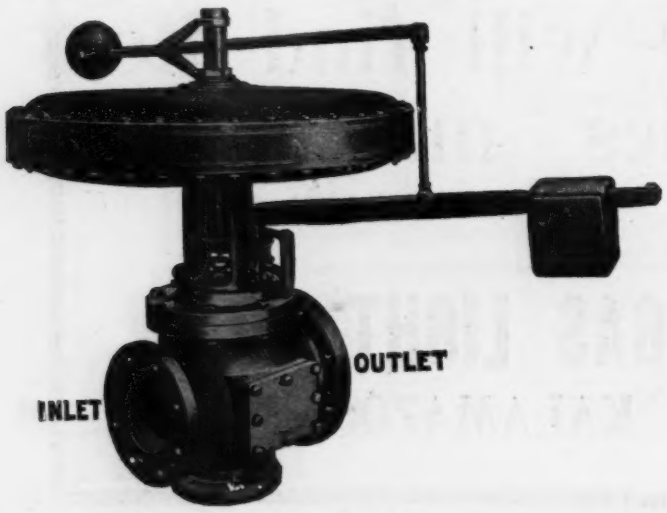

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PUBLIC LIGHTING TABLE.

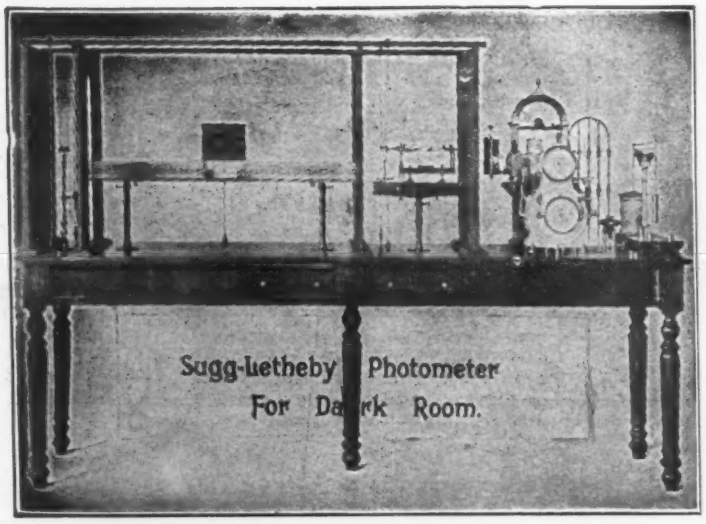
JANUARY, 1907.

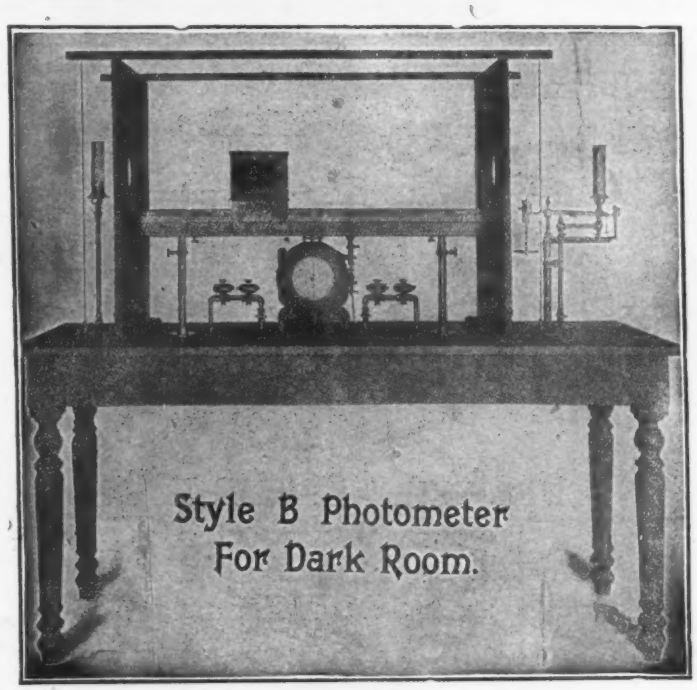
Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.
Tue.	1	5.20 PM	7.40 PM
Wed.	2	5.20	8.30
Thu.	3	5.20	9.30
Fri.	4	5.20	10.30
Sat.	5	5.20	11.40
Sun.	6	5.20	12.40 AM
Mon.	7	5.20 LQ	1.50
Tue.	8	5.20	3.00
Wed.	9	5.20	4.10
Thu.	10	5.20	6.20
Fri.	11	5.20	6.20
Sat.	12	5.20	6.20
Sun.	13	5.30 NM	6.20
Mon.	14	5.30	6.20
Tue.	15	5.30	6.20
Wed.	16	5.30	6.20
Thu.	17	5.30	6.20
Fri.	18	9.10	6.20
Sat.	19	10.10	6.20
Sun.	20	11.10 FQ	6.20
Mon.	21	12.10 AM	6.20
Tue.	22	1.10	6.20
Wed.	23	2.10	6.20
Thu.	24	3.00	6.20
Fri.	25	4.00	6.20
Sat.	26	4.50	6.20
Sun.	27	5.30	6.10
Mon.	28	No L.	No L.
Tue.	29	No L FM	No L.
Wed.	30	No L.	No L.
Thu.	31	5.50 PM	8.30 PM

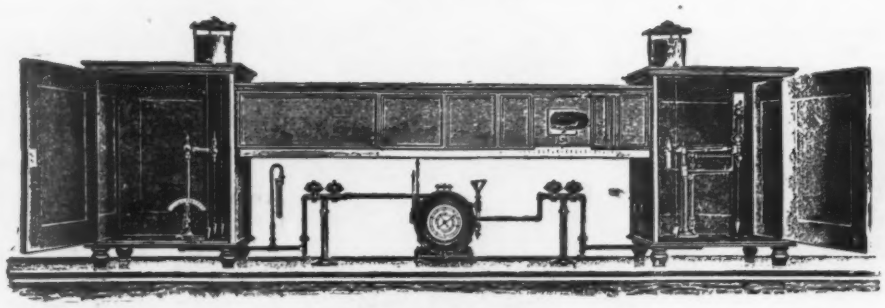
TOTAL HOURS DURING 1907.

By Table No. 1.

	Hrs.Min.
January	211.10
February	193.40
March	182.10
April	167.00
May	157.00
June	145.30
July	151.50
August	162.30
September	175.30
October	202.40
November	209.30
December	231.50
Total, yr.	2190.20







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CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

JANUARY, 1907.

Day of Week.	Date.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Light.	Extinguish.
		P. M.	A.M.
Tue.	1	4.30	6.30
Wed.	2	4.30	6.30
Thu.	3	4.30	6.30
Fri.	4	4.30	6.30
Sat.	5	4.30	6.30
Sun.	6	4.30	6.30
Mon.	7	4.30	6.30
Tue.	8	4.40	6.30
Wed.	9	4.40	6.30
Thu.	10	4.40	6.30
Fri.	11	4.40	6.30
Sat.	12	4.40	6.30
Sun.	13	4.40	6.30
Mon.	14	4.40	6.30
Tue.	15	4.50	6.25
Wed.	16	4.50	6.25
Thu.	17	4.50	6.25
Fri.	18	4.50	6.25
Sat.	19	4.50	6.25
Sun.	20	4.50	6.25
Mon.	21	4.50	6.25
Tue.	22	5.00	6.25
Wed.	23	5.00	6.25
Thu.	24	5.00	6.25
Fri.	25	5.00	6.25
Sat.	26	5.00	6.25
Sun.	27	5.00	6.25
Mon.	28	5.00	6.25
Tue.	29	5.05	6.15
Wed.	30	5.05	6.15
Thu.	31	5.05	6.15

TOTAL HOURS DURING 1907.

By Table No. 2.

	Hrs.Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.45

NEW YORK, 318 West 42d Stree .
BOSTON, 820 Beacon Building.
PHILADELPHIA, Broad and Arch Streets.
ST. LOUIS, 712 Ree Building.
CHICAGO, 218 La Salle Street.
SAN FRANCISCO, 512 Oak Street.

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No. 36.

....OF AMERICA....

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Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

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IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

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No. 38.

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Succeeds and Excels the Electric Light at One-Quarter the Cost.

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Elegance of Appearance.
Best Possible Material and Workmanship.
Perfect Combustion.
Lowest Gas Consumption.
Highest Candle Power.
Will Fit Any Fixture.
Will Not Flash Back.
Will Not Blacken Mantles.
Will Not Discolor Fixtures.
Will Not Discolor Ceilings.

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Best Welsbach Quality.
Extra Strong and Durable.
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Rich Mellow Light.

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Protection from the Falling of Heated Particles.
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St. Johnsbury, Vt.	**Allentown, Pa.**	**Jefferson City, Mo.**
Memphis, Tenn. (2d contract).	**Omaha, Neb.**	**Peekskill, N. Y.** (2d contract).
Council Bluffs, Ia. (2d contract).	**Muskegon, Mich.**	**Waterville, Me.**
Seattle, Wash. (2d contract).	**Nazareth, Pa.** (2d contract).	**Washington, D. C.** (3d contract).

TOTAL SETS TO JULY 1, 1906, = = = = = 618
TOTAL DAILY CAPACITY TO JULY 1, 1906. 488,930,000 CUBIC FEET.

The United Gas Improvement Company

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
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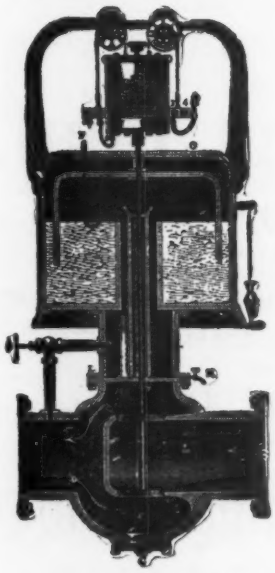

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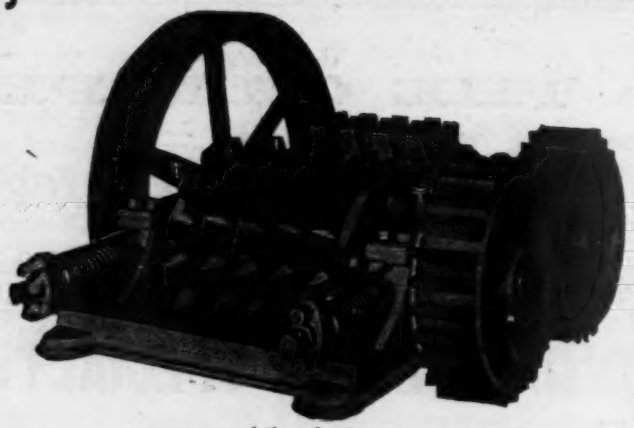

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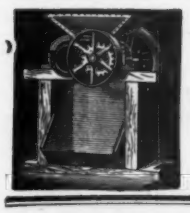

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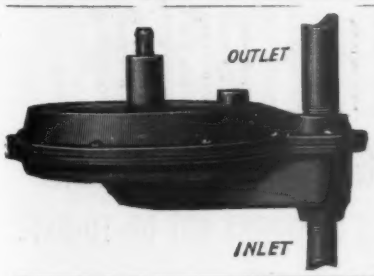

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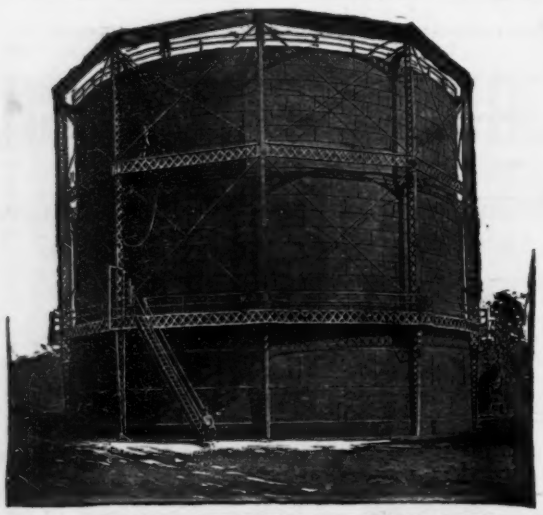

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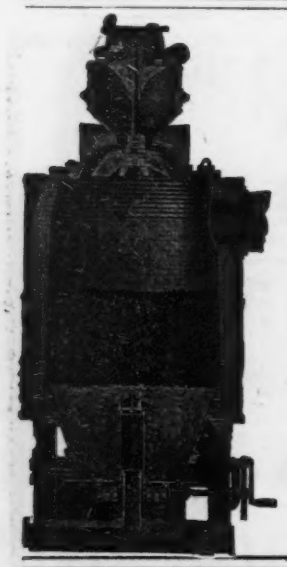

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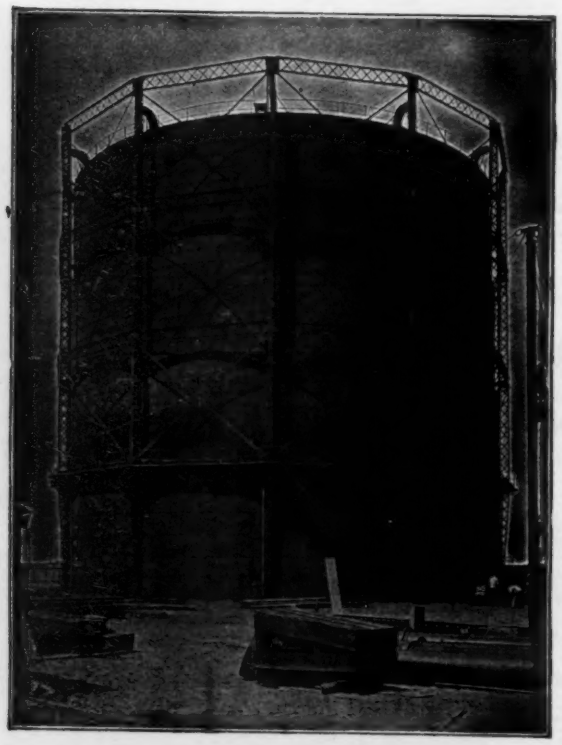

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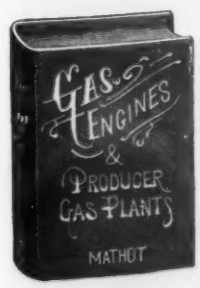

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